FARMERS' BULLETIN 1166

UNITED STATES DEPARTMENT OF AGRICULTURE

PORK ON THE FARM

KILLING CURING AND CANNING

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UNITED STATES DEPARTMENT OF AGRICULTURE

EVERY FARM should produce the pork and pork products which are consumed on that farm.

Selling hogs and buying pork involves profits, but not for the farmer engaged in the practice.

Home curing of pork is an old practice. It nearly went out of style, but the style is rapidly becoming popular again.

Home-cured pork, fresh-canned pork, sausage, pudding, scrapple, headcheese, pickled pigs' feet, and lard afford a variety of products to supplement the daily meals.

Preparations of highly nutritious and palatable pork products for home use are easily made.

This publication discusses the details of converting the farm-grown hog into high-class, appetizing, nutritious foods available for use in the fresh, cured, or canned state at any season of the year.

Joint Contribution from the Bureau of Animal industry
JOHN R. MOHLER, Chief
And States Relations Service
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Washington, D. C. February, 1921.

PORK ON THE FARM.

KILLING, CURING, AND CANNING.[1]

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MEAT ANIMALS, especially hogs, may be raised and the meat cured at home for much less than the cost of purchased meat. A market for good country-cured hams, shoulders, and sides is easily found. In spite of these facts, however, the practice of purchasing cured meats has increased among farmers. It may not be practicable for every farmer to butcher and cure the meat from all the hogs he grows, but in nearly every community a few farmers could do it and make good profits. Farmers who sell country-cured meats have very little difficulty in establishing a permanent trade. To accomplish it one must understand the kind of cured meat the trade demands. A well-marbled, juicy, savory piece of meat showing the proper admixture of fat and lean, properly cured and possessing a good flavor, is the kind the consumer desires.

SELECTION OF HOGS FOR BUTCHERING.

HEALTH.

In selecting hogs for butchering, health should have first consideration. Even though the hog has been properly fed and carries a prime finish, the best quality of meat can not be obtained if the animal is unhealthy; there is always some danger that disease may be transmitted to the person who eats the meat. The keeping quality of the meat is always impaired by fever or other derangement.

[1] This bulletin supersedes Farmers' Bulletin 913, Killing Hogs and Curing Pork.

CONDITION.

A hog in medium condition, gaining rapidly in weight, yields the best quality of meat. Do not kill a hog that is losing flesh. A reasonable amount of fat gives juiciness and flavor to the meat, but large amounts of fat are objectionable.

QUALITY.

The breeding of animals plays an important part in producing carcasses of high quality. Selection, long-continued care, and intelligent feeding will produce meat of desirable quality. Smooth, even, and deeply fleshed hogs yield nicely marbled meats.

AGE FOR KILLING.

The meat from very young hogs lacks flavor and is watery, and that from old hogs generally is very tough. The meat of old hogs will be improved, however, if they are properly fattened before slaughter. Hogs may be killed for meat any time after 8 weeks of age, but the most profitable age at which to slaughter is when from 8 to 12 months old.

TREATMENT BEFORE SLAUGHTER.

Hogs intended for slaughter should not be kept on full feed up to the time of killing. It is better to hold them entirely without feed for 18 or 24 hours prior to that time, but they should have all the fresh water they will drink. This treatment promotes the elimination of the usual waste products from the system; it also helps to clear the stomach and intestines of their contents, which in turn facilitates the dressing of the carcass and the cleanly handling and separation of the viscera. No animal should be whipped or excited prior to slaughter.

EQUIPMENT FOR SLAUGHTERING.

It is essential to have the proper equipment for rapid and skillful work at killing time: A straight sticking knife, a cutting knife, a 14-inch steel, a hog hook, a bell-shaped stick scraper, a gambrel, and a meat saw (fig. 1). More than one of each of these tools may be necessary if many hogs are to be slaughtered and handled to best advantage. A barrel is a convenient receptacle in which to scald hogs. The barrel should be placed at an angle of about 45 degrees at the end of a table or platform of proper height. The table and barrel should be fastened securely to protect the workmen. A block and tackle will reduce labor. All the tools and appliances should be in readiness before beginning.

KILLING AND DRESSING.

Ordinarily it is not necessary to stun or shoot a hog before sticking, although sometimes it is done. If the hog is stuck without being stunned, it should be squarely on its back when stuck. Two men can reach under and grasp the legs on the side of the body opposite to them and with a quick jerk turn the hog over on its back. One man can stand astride the body with his legs just back of the hog's shoulders, taking a good grip on the forelegs (fig. 2). In this position the hog can be held in place while the other man does the sticking.

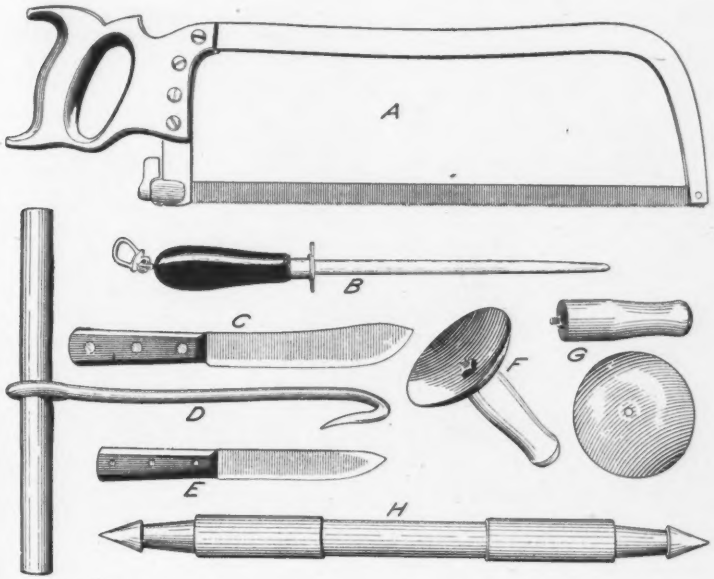

FIG. 1.—Tools for killing and dressing hogs. *A*, meat saw; *B*, 14-inch steel; *C*, cutting knife; *D*, hog hook; *E*, 8-inch sticking knife; *F*, bell-shaped stick scraper; *G*, separate parts of stick scraper; *H*, gambrel.

STICKING.

A narrow, straight-bladed knife (see E in fig. 1) serves well for sticking a hog. The knife should be pointed directly toward the root of the tail and held in a line with the backbone. Thrust the knife in directly in front of the breastbone, and keep in a straight line so as not to stick a shoulder, causing blood to clot, which results in waste in trimming or a shoulder which keeps poorly. After the knife has been inserted 6 or 8 inches, turn it and withdraw. This severs the vessels in the neck and insures better bleeding. Avoid sticking the

heart, for in that case the blood will not be pumped from the arteries. After sticking, the hog may be released; but preferably the animal may be strung up by a hind leg to facilitate thorough bleeding.

SCALDING AND SCRAPING.

The most convenient vessel in which to heat water for scalding is a large caldron or a kettle, which should be located near the place of butchering. If the water is heated in the house, it should be boiling when removed from the stove. If the hog is not too large, a barrel may be used for scalding. The arrangement for most efficient scald-

FIG. 2.—Position for sticking the hog.

ing is shown in figure 3. If the barrel is not large enough to accommodate the hog, a blanket or several sacks may be laid over the carcass and scalding water poured over it. The blanket or sacks will retain the moist heat long enough to loosen the hair.

At the time the hog is scalded the water should have a temperature of from 145° to 155° F. If the water is too hot the hair may set, causing even more trouble than if too cold. A teaspoonful of lye or a small shovelful of wood ashes added to every 30 gallons of water will aid in removing the scurf. After adding either of these materials the water should be stirred thoroughly.

If the barrel is used, insert the hog hook in the lower jaw, place the hog on the table, and slide it into the barrel (fig. 3). The rear end of the hog is scalded first for the reason that if the water is too

hot and the hair sets it can be removed more easily from the rear than from the fore part. The hog should be kept moving in the water to be sure that no part rests against the side of the barrel. Occasionally the hog should be drawn out of the water to air, when the hair may be "tried." When the hair and scurf easily slip from the surface, scalding is complete. The same test for determining whether scalding has continued long enough may be used when blankets or sacks are used, and the dressing of the carcass should also proceed in the same manner. Pull the hog out upon the table and quickly remove the hair and scurf from the legs and feet. The simplest way to do this is to twist the legs in both hands. Use the

FIG. 3.—A convenient arrangement for scalding.

hog hook to remove the dewclaws while they are still hot. Remove the hair and scurf from the rear end of the hog by means of a bell-shaped scraper.

Cut the skin lengthwise for about 3 or 4 inches just below the hocks in both hind legs. Loosen the tendons in each leg and insert the gambrel Scald the front part of the hog and pull it out on the table as before. Remove the hair and scurf immediately from the ears, forelegs, and head, as those parts cool very quickly. Use the bell-shaped scraper to remove the remaining hair and scurf. If the hair fails to yield in any particular part, cover that portion with a gunny sack and pour on hot water. When most of the hair and scurf is removed pour hot water over the entire carcass and by means of a knife shave off any hair that is left. Hang the hog up, pour a bucketful of cold water over it, and scrape off the remaining dirt or scurf.

Much of the heavy labor may be avoided by use of a hoist, such as a block and tackle, for lifting the hog.

REMOVING ENTRAILS.

After the hog is hung up and the surface is clean the next step is to remove the entrails. Cut through the mid line, beginning at the top, and continue cutting down to the head. Cut around the rectum on each side and pull it out between the pelvic bones.

FIG. 4.—Removing the intestines.

Place the knife between the first and second fingers of the left hand, inserting the fingers where the opening has been made, and with the right hand carry the knife down the body and force through the breastbone to the opening in the neck. The fingers will serve as a guide in making the cut and will protect the intestines. When the opening has been made, remove the fat which surrounds the stomach. Remove the intestines, stomach, and gullet in one operation, thus preventing contamination of the carcass by the stomach contents. Remove the pluck, consisting of the heart, lungs, and windpipe, after cutting the diaphragm, which is the membrane that separates the organs of the chest from the stomach, bowels, and other abdominal organs. By cutting between the light and dark portions of the diaphragm and continuing down along the backbone the entire pluck may be easily removed. To facilitate cooling, the carcass should be split or sawed down the backbone. In splitting or sawing the carcass be careful to cut near the mid line.

THE LEAF FAT.

While the carcass is still warm remove the leaf or kidney fat in order to facilitate its cooling. To remove the leaf fat, peel it upward

with the fingers, beginning at the bottom. The kidneys, which are in this fat, should be removed. The leaf fat should be spread out on a table to cool, with the thin membrane side turned down. The gut fat should not be mixed with the leaf fat in rendering.

COOLING THE CARCASS.

The carcass should be cooled rapidly after slaughtering, but not allowed to freeze. Select a day when there is chance for cooling the carcass before the surface freezes. The desirable temperature for cooling meat is from 34° to 40° F. In summer it is necessary to have refrigeration. In the fall it is best to kill in the afternoon, allowing the carcass to cool overnight. Hang the carcass in a dark cellar or cool outbuilding where flies can not get to it. Fresh meat absorbs odors very readily; for that reason do not hang the carcass in a freshly painted room or in a room with tar, kerosene, or gasoline.

CUTTING UP A HOG.

A carcass should not be cut up until it has thoroughly cooled. The usual farm method of cutting up a hog is to remove the head, sever the ribs on each side of the backbone, take out the backbone, and divide the carcass into two equal parts. The ribs are taken out before the sides are "blocked." Another method is to split the carcass with a saw or cleaver as near the mid line as possible. Cut each half into four parts, head, shoulder, middle, and hams, as shown in figure 5, right side.

HEAD.

The head is generally removed before the carcass is split into halves. Cut about an inch back of the ears, making a complete circle around the neck. If the cut does not strike the atlas joint, twist the head and it will yield. The fat of the head may be used for lard and the fleshy parts for sausage or headcheese. The jowl is sometimes used for cooking with vegetable greens.

SHOULDER.

Cut off the front foot about 1 inch below the knee. The shoulder cut is made through the third rib at the breastbone and across the fourth. Remove the ribs from the shoulder, also the piece of backbone which is attached. Cut close to the ribs in removing them so as to leave as much meat on the shoulder as possible. These are "shoulder or neck ribs" and make an excellent dish when fried or baked. If only a small quantity of cured meat is desired, the top of the shoulder may be cut off about one-third the distance from the top and parallel to it. The fat of the shoulder top may be used for lard and the lean meat for steak or roasts. It should be trimmed smoothly. In case the shoulders are very large divide them cross-

wise into two parts (see fig. 6). This enables the cure mixture to penetrate more easily and therefore lessens the danger of souring.

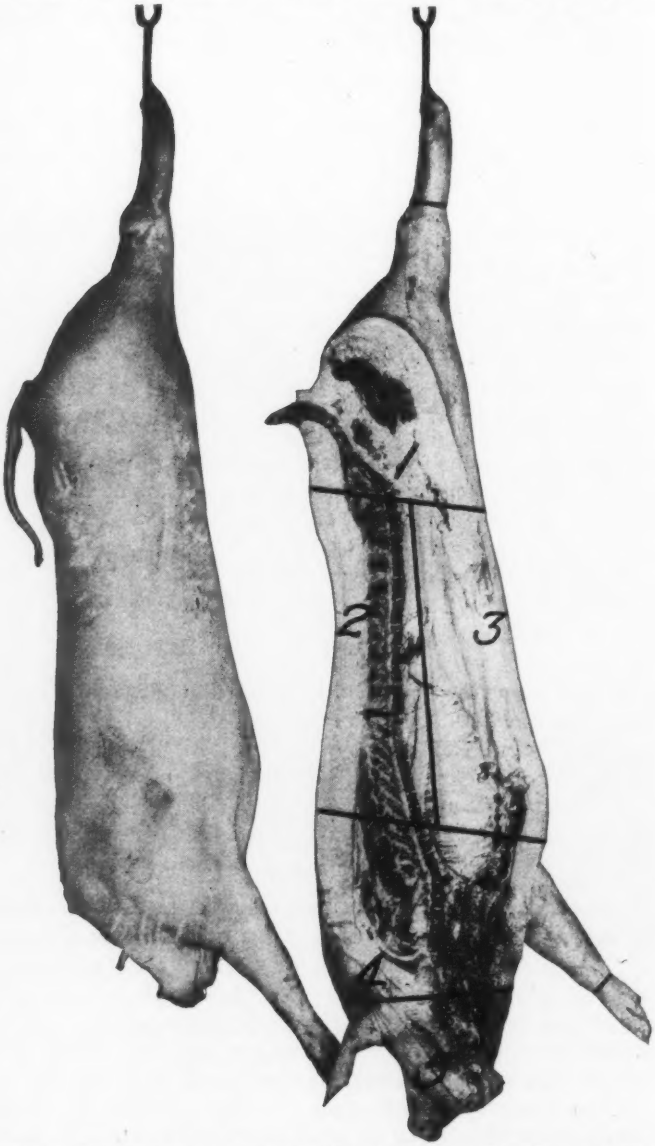

FIG. 5.—Cuts of pork: 1. Ham. 2. Loin. 3. Bacon. 4. Shoulder. 5. Head.

The fat trimmings should be used for lard and the lean trimmings for sausage.

MIDDLING OR BACON.

The ham is removed from the middling by cutting just at the rise in the backbone and at a right angle to the shanks, as shown in figure 5.

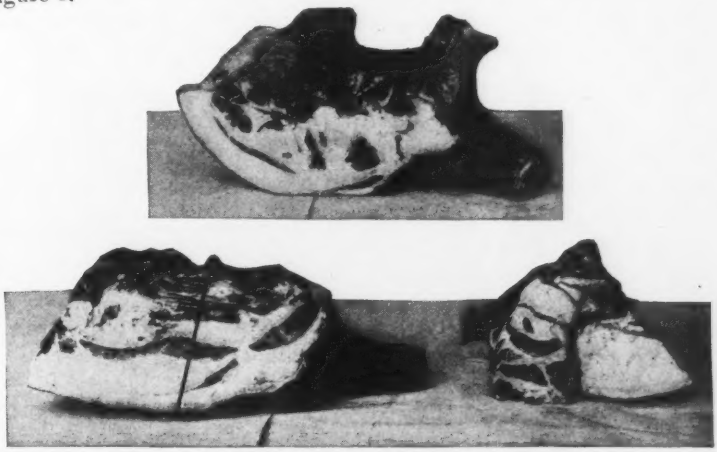

FIG. 6.—The shoulder cuts and trimmings.

The loin and fatback are cut off in one piece, parallel with the back just below the tenderloin muscle on the rear part of the middling. Remove the fat on the top of the loin, but do not cut into

FIG. 7.—Untrimmed loin, trimmed loin, and loin trimmings.

the loin meat. The lean meat is excellent for canning or it may be used for chops or roasts and the fatback for lard. The remainder should then be trimmed for middling or bacon. Remove the ribs, cutting as close to them as possible. If it is a very large side, it may be cut into two pieces. Trim all sides and edges as squarely as possible (fig. 9).

HAM.

Cut off the foot about 1 inch below the hock joint. All rough and hanging pieces of meat should be trimmed from the ham. It should then be trimmed smoothly, exposing as little lean meat as possible, because the curing hardens it (fig. 8). All lean trimmings should be saved for sausage and fat trimmings for lard.

FIG. 8.—Ham and ham trimmings.

The other half of the carcass should be cut up in similar manner.

MEAT TRIMMINGS AND FAT TRIMMINGS.

After the carcass has been cut up and the pieces are trimmed and shaped properly for the curing process there are many pieces of lean meat, fat meat, and fat which can be used for making sausage and lard. The fat should be separated from the lean and used for lard. The meat should be cut into convenient-sized pieces to pass through the grinder.

RENDERING LARD.

The leaf fat makes lard of the best quality. The back strip of the side also makes good lard, as do the trimmings of the ham, shoulder, and neck. Intestinal or gut fat makes an inferior grade and is best rendered by itself. This should be thoroughly washed and left in cold water for several hours before rendering, thus partially eliminat-

FIG. 9.—A side of bacon and bacon trimmings.

ing the offensive odor. Leaf fat, back strips, and fat trimmings may be rendered together. If the gut fat is included, the lard takes on a very offensive odor.

First, remove all skin and lean meat from the fat trimmings. To do this cut the fat into strips about 1½ inches wide, then place the strip on the table, skin down, and cut the fat from the skin. When a piece of skin large enough to grasp is freed from the fat, take it in the left hand and with the knife held in the right hand inserted between the fat and skin, pull the skin. If the knife is slanted downward slightly, this will easily remove the fat from the skin. The strips of fat should then be cut into pieces 1 or 1½ inches square, making them about equal in size so that they will try out evenly (fig. 10).

FIG. 10.—Pieces of fat cut for rendering.

Pour into the kettle about a quart of water, then fill it nearly full with fat cuttings. The fat will then heat and bring out the grease without burning. Render the lard over a moderate fire. At the beginning the temperature should be about 160° F., and it should be increased to 240° F. When the cracklings begin to brown, reduce

the temperature to 200° F. or a little more, but not to exceed 212° F., in order to prevent scorching. Frequent stirring is necessary to prevent burning (fig. 11). When the cracklings are thoroughly browned, and light enough to float, the kettle should be removed from the fire. Press the lard from the cracklings. When the lard is removed from the fire allow it to cool a little. Strain it through a

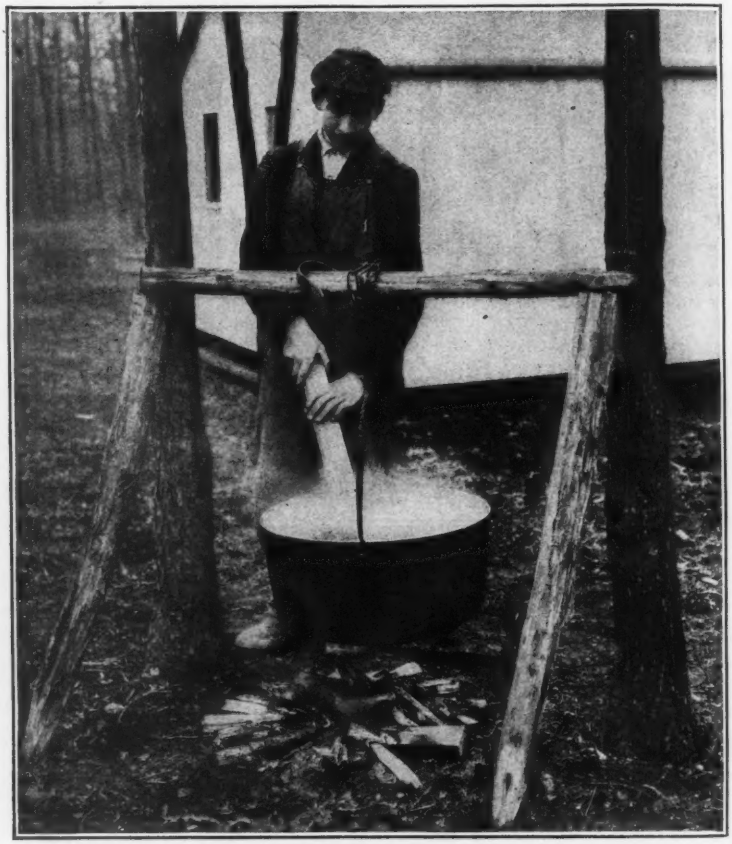

FIG. 11.—A suitable kettle for rendering lard.

muslin cloth into the containers. To aid cooling stir it, which also tends to whiten it and make it smooth.

Lard which is to be kept for a considerable time should be placed in air-tight containers and stored in the cellar or other convenient place away from the light, in order to avoid rancidity. Fruit jars make excellent containers for lard, because they can be completely sealed. Glazed earthenware containers, such as crocks and jars, may

also be used. All containers should be sterilized before filling, and if covers are placed on the crocks or jars, they also should be sterilized before use. Lard stored in air-tight containers away from the light has been found to keep in perfect condition for a number of years.

When removing lard from a container for use, take it off evenly from the surface exposed. Do not dig down into the lard and take out a scoopful, as that leaves a thin coating around the sides of the container, which will become rancid very quickly through the action of the air.

CURING PORK.

The first essential in curing pork is to make sure that the carcass is thoroughly cooled, but meat should never be allowed to freeze either before or during the period of curing.

The proper time to begin curing is when the meat is cool and still fresh, or about 24 to 36 hours after killing.

VESSELS FOR CURING.

A clean, hardwood molasses or sirup barrel is a suitable vessel in which to cure pork. The barrel should be clean and tight so as to prevent leakage. A large stone jar is the best container in which to cure meat, though the initial cost is high; such a container is very easily kept clean. If a barrel is used repeatedly for curing pork, it is necessary to scald it out thoroughly before fresh pork is packed in it.

CURING AGENTS.

Salt, saltpeter, sugar, and molasses are the principal preservatives used in curing pork. The use of borax, boric acid, formalin, salicylic acid, and other chemicals is prohibited in connection with meats and products to which the Federal meat-inspection law is applicable.

Salt when applied alone to meat makes it very hard and dry, because its action draws out the meat juices and hardens the muscle fibers. Saltpeter is used to hasten the curing of the meat. It is more astringent than salt and should be used sparingly. Sugar and molasses soften the muscle fibers and improve the flavor of the meat; hence a combination of salt and sugar makes a good cure.

PLACE FOR CURING.

A cool, well-ventilated cellar, free from rats, is the most desirable place for both brine and dry curing. The smokehouse may also be used for this purpose, but it should be observed that when curing by the dry-salt method special attention should be given to the ventilation to prevent excessive dryness.

Cold-storage and ice plants generally have rooms equipped with partitioned shelves, where farmers may store their meat during the process of curing at an even temperature, which will insure excellent results. This should be beneficial in southern climates, where the weather is warm or subject to sudden change. In localities where such refrigeration facilities have not been established cooperative cold-storage plants conducted by a number of farmers in a community may be found to be a good investment, as plants of that kind may be used also for the purpose of manufacturing ice during the summer and the power may be utilized further in generating electricity for lighting.

DRY CURE COMPARED WITH SWEET-PICKLE OR BRINE CURE.

There are two methods of curing pork—the dry cure and the sweet-pickle or brine cure. The dry cure is preferred, as it is simpler and requires less handling of the meat, as will be observed from the formulas outlined in the following paragraphs. The sweet-pickle or brine cure is not advocated in the southern sections of the country, in view of the uncertain temperatures, the cure being retarded when the temperature ranges above 50° F., causing the meat to spoil. Dry-cured meat improves with age and is better several months after it is smoked. Irrespective of the curing method used, it is advisable before curing to rub the surface of the meat with fine salt and allow it to drain, flesh side down, for from 6 to 12 hours.

DRY-CURED PORK.

Formula No. 1.—For each 100 pounds of meat use—

8 pounds salt.
2½ pounds molasses or sirup, warmed slightly.
2 ounces saltpeter.
3 ounces black pepper.
2 ounces red pepper.

Mix the ingredients well. Rub the mixture over the meat thoroughly and pack it away in a barrel, box, or on a table. About the third day break the bulk and repack to insure thorough contact with the cure mixture, then allow the meat to remain until the cure is completed. This will take two days in cure for each pound that the individual pieces of meat weigh; for example, a 10-pound ham will take 20 days. After the meat has cured hang it in the smokehouse without washing. (See p. 22 for directions for smoking.) When the meat is packed in tight barrels the liquid formed will aid in curing the heavier pieces of meat, which should be at the bottom.

Some persons attempt to use the foregoing formula without the saltpeter, but the result will not be satisfactory. The saltpeter should by no means be omitted.

SWEET-PICKLE OR BRINE-CURED PORK.

Formula No. 2.—For each 100 pounds of meat use—

9 pounds salt.
2½ pounds sugar or 4 pounds molasses or sirup.
2 ounces saltpeter.
4½ gallons water.

If the weather is warm 10 pounds of salt is preferable.

Allow four days for curing each pound of ham or shoulder and three days for each pound of bacon and smaller pieces. For example, a 15-pound ham will take 60 days; a piece of bacon weighing 10 pounds, 30 days.

All the ingredients are placed in the water and thoroughly stirred. The brine mixture should be prepared the day before it is to be used, so that it will be completely dissolved. Place the hams on the bottom of the container, shoulders next, bacon sides and small cuts on top. Cover with boards weighted with stones or bricks, as iron rusts and stains the meat. Pour the pickle in and be sure that it covers the meat thoroughly. In seven days take out all the meat, remove the pickle, replace the meat in the container, weight it down, then cover again with the pickle. Repeat this process every seven days until cure is completed.

If the pickle becomes ropy, take out all the meat and wash it and the container thoroughly. Boil the ropy pickle, or, better, make new pickle. When each piece of meat has received the proper cure, remove it from the pickle and wash in lukewarm water. String it and hang it in the smokehouse. (See p. 22 for directions for smoking.) The temperature of the smokehouse should not exceed 120° F. Smoke the meat until it has a good chestnut color.

CURING SMITHFIELD HAMS.

The following method for produeing Smithfield hams has been furnished:

The hams are placed in a large tray of fine salt, then the flesh surface is sprinkled with finely ground saltpeter until they are as white as though covered by a moderate frost, or, say, use 4 to 6 ounces of the powdered saltpeter to each 100 pounds of green hams.

After applying the saltpeter, salt immediately with the fine salt, covering the entire surface well. Then pack the hams in bulk, skin-side down, but in piles not more than 3 feet high. In ordinary weather the hams should remain thus for three days. Then break bulk and resalt with fine salt. The hams thus salted and resalted should now remain in bulk one day for each pound; that is, a 10-pound ham should remain 10 days and in like proportion of time for larger and smaller sizes. When the cure is complete wash

with tepid water until the hams are clean, and after partially drying rub the entire surface with finely ground black pepper. They should then be hung in the smokehouse and the important operation of smoking begun. The smoking should be done very gradually and slowly, extending through 30 or 40 days.

After the hams are cured and smoked they should be repeppered to guard against vermin and then be bagged. Such hams improve with age and are in perfect condition when 1 year old.

PICKLED PORK.

Fatbacks cut into suitable pieces for curing are generally treated in the following manner: The pieces of meat are packed in a container and a pickle made of the following ingredients is poured over the meat: To 4 gallons of water add 10 pounds of salt and 2 ounces of saltpeter for each 100 pounds of meat.

PICKLED PIGS' FEET.

The feet may be used for pickled pigs' feet or pig's-foot jelly.

In preparing pickled pigs' feet, place them in salt pickle for several days. Then boil them for a varying length of time, depending upon the size of the feet, taking care to remove them from the kettle before the separation of the meat from the bones. Split the feet lengthwise, place them in a jar or other receptacle, and cover with vinegar to which bay leaves, allspice, and whole black pepper have been added.

Pig's-foot jelly is prepared by curing the feet for several days in salt pickle, after which they should be boiled until the meat separates from the bone. Add vinegar, allspice, and pepper, and pack into molds.

MAKING SAUSAGE.

Trimmings and pieces of meat which otherwise might be wasted may be converted into some form of sausage. Sausage making is a trade well worth learning. Often on the farm when animals are butchered for home consumption portions of the carcass are not utilized to the best advantage. A demand for fresh and smoked country sausage always exists, and it is just as important for every farmer to know how to make good sausage as it is to know how to make good hams and bacon.

The only equipment necessary to make sausage is a meat cutter with a stuffer attachment. A knife, cord string, and casings or muslin bags also will be needed. Muslin bags can be made of any size, but the most convenient are 12 inches long by 2 inches in diameter. When sausage is stuffed in muslin bags they should be paraffined after stuffing. Sausage stuffed in muslin bags and paraf-

fined keeps longer and better than in casings. Sausage will keep very well in stone crocks or tin pans if a layer of hot lard or paraffin is poured over the top.

PURE PORK SAUSAGE.

Good pork sausage may be made as follows:

65 pounds fresh lean meat.
35 pounds fat.
1¾ pounds salt.
2 ounces fine sage.
1 ounce ground nutmeg.
4 ounces black pepper.

Cut the meat into small pieces, mix and add the spices, and then put through the grinder, using the small plate. After it is well

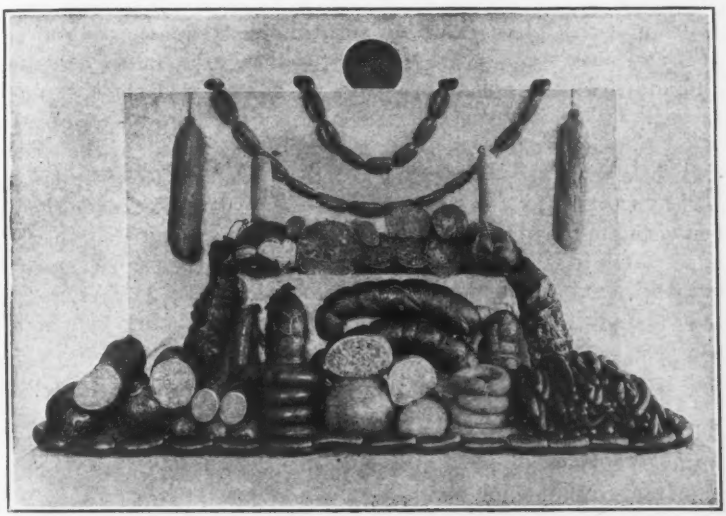

FIG. 12.—A display of various kinds of sausage.

ground, mix thoroughly to be sure that it is uniformly seasoned. No water should be added if the sausage is to be stored away in bulk. If it is to be stuffed in casings a little water may be necessary to soften the meat so that it will slip easily into the casings.

SMOKED OR COUNTRY SAUSAGE.

The following ingredients are used in making smoked or country sausage:

85 pounds lean pork.
15 pounds beef.
1½ or 2 pounds salt.
4 ounces black pepper.
1 ounce red pepper.
1 ounce sweet marjoram.
1 ounce mace.

Cut the meat into small pieces and sprinkle seasoning over it, then run it through the grinder, using the small plate. Put it away in a

cool place for from 24 to 36 hours, then add a little water and stuff into hog casings and smoke in a very cool smoke until a dark-mahogany color is obtained.

FRANKFURT OR VIENNA SAUSAGE.

Frankfurt or Vienna-style sausage is more popular with the manufacturers and the trade than any other kind. It is made as follows:

70 pounds beef.
30 pounds pork (not too lean).
20 pounds water.
1½ or 2 pounds salt.
2 ounces nutmeg.
¼ ounce black pepper.
1 or 2 ounces red pepper.

Cut the beef into small pieces, salt it, and allow it to cure for 48 hours in a cool place. Cut the pork into small pieces and put the beef and pork through the grinder together. Put into a container and add the water and spices. After it is all mixed put it through the grinder again, using the fine plate. Stuff into sheep casings. After the sausage is stuffed into the casings by means of the thumb and forefinger, press the casing together at about 4-inch intervals. Twist the first link two or three times. The next link made should be twisted in the opposite direction to keep the casing from untwisting. After it is twisted into links, hang it in the smokehouse for about 2 hours at a temperature not to exceed 125° F. After it is smoked, boil it for 5 or 10 minutes; then plunge it into cold water and hang it in a cool place.

BOLOGNA-STYLE SAUSAGE.

Bologna-style sausage is used extensively for lunches on picnics or outings. Its keeping qualities are excellent. The following ingredients are used in making it:

60 pounds cured beef.
40 pounds pork.
20 pounds water.
1½ or 2 pounds salt.
2 ounces mace.
1 ounce coriander.
4 ounces black pepper.

Grind the beef and let it cure for 24 hours in a cool place, then grind it very fine.[2] Put the pork through the grinder, using the medium plate. Then put the beef and pork together into a container and add the spices and water. Mix thoroughly until it takes on a dull color and becomes sticky. Stuff into weasands, large beef casings, or in beef rounds. This sausage can also be stuffed into muslin bags and paraffined. It will keep perfectly prepared in this way. Allow it to hang about 20 minutes in a cool place. Smoke for about 2 hours, or until a good color is obtained, at a temperature not to exceed

[2] Beef should be ground, salt and seasoning added, and the bulk stored away for from 24 to 48 hours before using it for sausage. Fresh meat stuffed into casings and smoked, invariably spoils.

140° F. After the bologna is smoked it should be cooked, the weasands and rounds about 30 minutes, and the larger bolognas about 1½ hours, at a temperature of 160° F. To tell when bologna is cooked enough, squeeze it in the hand, and if done it will squeak when the pressure is released. Place in cold water for about 30 minutes and then hang it up in a cool place to keep.

BLOOD SAUSAGE.

Blood sausage is made of the following ingredients:

25 pounds cured back fat or shoulder fat.
7 pounds cured fat skins.
6 pounds blood.
½ pound onions.
1 pound salt.
½ ounce white pepper.
1 ounce sweet marjoram.
¼ ounce cloves.

Cook the fat, which has been dry-cured or sweet-pickled, for about 1 hour and the skins 2 hours at a temperature of 200° F. When cooked put through grinder, using small or medium plate. Put into a container, add blood and seasoning, and mix thoroughly. Stuff into large beef casings and boil, in the same water that the meat was cooked in, until the sausage floats. Dip the sausage into cold water and hang away to cool.

HEADCHEESE.

The head is frequently used for making headcheese. The head should be shaved clean, the snout skinned and nostrils cut off just in front of the eyes. Cut out the eyes and eardrums. The fattest part should be used for lard. When the head is cleaned, soak it in water for some time to extract the blood and dirt. After the head is thoroughly cleaned cover it with water and boil until the meat separates from the bones. Tongues may be cooked with the head. When thoroughly cooked take out the meat, saving the liquor for future use. Chop the meat up fine. Season with the following for every 50 pounds of meat:

2 gallons of the liquor.
1½ pounds salt.
3 ounces black pepper.
1 ounce red pepper.
4 ounces ground cloves.

All should be mixed thoroughly so that proper seasoning is obtained. If casings are available, stuff the mixture into large beef casings. A hog stomach, after it is thoroughly cleaned, may be used. If the meat is stuffed into casings it should be boiled again in the same liquor in which the meat was boiled. The meat in the casings should be boiled until it floats, then placed in cold water for a short time. Store it away in a clean, cool place on a shelf or table. Place a board over the meat in the casings with a weight on top in order to hold the shape and to prevent the moisture from collecting in one

spot. If there are no casings available in which to stuff the meat it should be kept in shallow pans.

LIVER PUDDING.

All the odds and ends of trimmings not used for sausage, resulting from cutting up the hog carcass, may be used in making liver pudding. The head, if used, should be cleaned as previously described under "Headcheese." The jowl should be cut off and salted down. The head, liver cut into slices and some beef or veal, if any is at hand, should be put into a kettle and boiled. The skin which has been cut from the fat also can be boiled with this meat. The skin will cook more quickly than the meat, so that it should be put into a cloth sack and removed when thoroughly cooked. Livers also cook in a very short time and should be removed. The meat should cook until it falls from the bones. All the meat except the skin and liver should be ground, using the smaller grinder plate. To 40 pounds of meat add about 1 gallon soup (the broth the meat was cooked in) and the following seasoning:

- 1½ pounds salt.
- 3 ounces sweet marjoram.
- 1 ounce allspice.
- 1 ounce black pepper.
- Garlic or onion, if desired.

The seasoning should be worked into the meat. This finished product can be put into jars covered with paraffin or stuffed into beef rounds. When stuffed into casings it should be cooked until it floats in the same water in which the meat was cooked. Then place in cold water until it is thoroughly cooled.

SUMMER SAUSAGE.

The following ingredients are used to make summer sausage:

- 25 pounds cured beef free from sinews.
- 15 pounds pork trimmings.
- 6 ounces white pepper.
- 1 ounce whole black pepper.
- 1 ounce whole mustard seed.

This sausage can be made in cold weather only. All the meat is put through the grinder and spices added. No salt is needed, the cured beef being salty enough. Mix it all thoroughly until it is evenly seasoned. Spread it out in a cool place and leave it for from 36 to 40 hours, then stuff it into hog-bung casings and let hang overnight. Smoke over very cool smoke for several days. This sausage can be kept in a dry place the year round. If it gets moldy, simply wipe the mold off.

SMOKING CURED MEAT.

The process of smoking helps to preserve the meat. Smoking also gives a desirable flavor to the meat if it is smoked properly and with the right kind of fuel.

THE SMOKEHOUSE.

The smokehouse can be made of any size and of the kind of material suitable to the demands of the owner. If a very small quantity of meat is to be smoked once a year, a barrel or a box (fig. 13) will answer. On the other hand, if a considerable quantity of meat is smoked and the house is to be permanent, it should be built of brick, concrete, or stone to be fireproof (fig. 14). A small building can be used if care is taken to confine the fire in an iron kettle to the center of the room. The safest method is to construct a fire pit outside the house and pipe the smoke into the house. The pipe running from the pit to the house should be buried to prevent crushing.

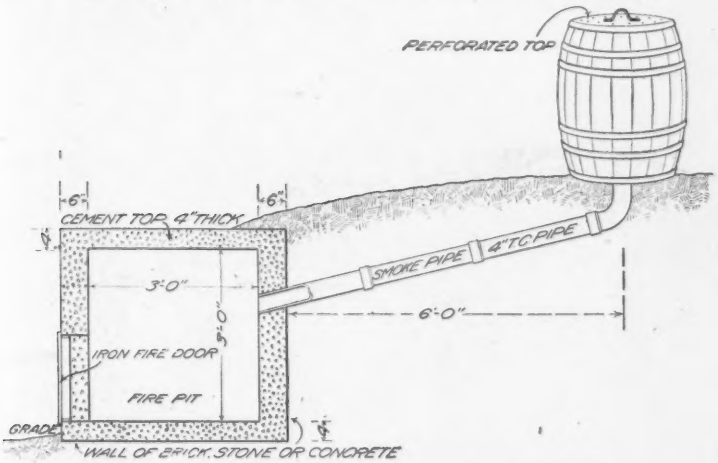

FIG. 13.—A type of smokehouse that can be constructed quickly and cheaply.

A smokehouse, 6 by 8 feet, 14 feet high, will give best results for general farm use. Ventilation should be provided to carry off the warm air and prevent overheating the meat. Small openings under the eaves or a chimney in the roof will control ventilation. If arrangements can not be made to have a fire pit outside the house, it should be built on the floor and a metal sheet constructed to shield the meat. If the meat is hung 6 or 7 feet above the fire, the shield will not be necessary, as at that height the meat will get the benefit of the thick smoke and still hang beyond the reach of the flame.

THE FUEL.

Green hickory or maple wood is the best fuel for smoking. Hard wood is preferable to soft wood. Resinous woods should never be used, as they give an objectionable flavor to the meat. Corncobs may be used, but they deposit carbon on the meat, giving it a dirty appearance.

SMOKING.

Meats which have been cured by the dry-cure method for the proper length of time are ready for smoking. Meats which have been cured by the sweet-pickle or brine method should be removed from the pickle and soaked for half an hour in clean water. If meat has overcured by remaining in pickle longer than the allotted time, soak for half an hour as recommended and three minutes extra for each day overtime for which it has remained in the pickle. Such meat

FIG. 14.—A farm smokehouse, fireproof and fairly tight.

has become pickle-soaked and its quality impaired. After soaking, rinse, fasten the strings securely, and hang in the smokehouse.

Hang the pieces so that they do not touch. This allows proper coloration of the meat to occur and gives good opportunity for circulation of the smoke. Keep the fire going continuously if smoking is to be completed in one operation, holding the temperature as even as possible and not allowing it to go beyond 120° F. From 36 to 48 hours may produce a satisfactory color, but if it is intended to keep the meat until well aged, longer and slower smoking is desirable.

(Some of the old, family methods call for light, intermittent smoking throughout six weeks.)

During warm weather it is better to start a fire every other day rather than heat the meat too much. In the winter, however, if the fire is not kept going, the meat may cool and the smoke will not penetrate properly. As soon as the meat is thoroughly smoked, open the doors and ventilator in order to cool the meat. When the meat is smoked it may hang in the smokehouse, but it is better that it should be wrapped and sacked.

FIG. 15.—Meat hanging in a smokehouse.

The use of "liquid smoke" has become more or less generally practiced in various sections of the country. The Federal meat-inspection regulations prohibit its use in packing houses where inspection is maintained. Meat prepared by farmers on the farms is prohibited by the above-mentioned regulations from interstate shipment if it has been subjected to liquid-smoke treatment.

STORING SMOKED MEATS.

After it is hard and firm, smoked meat may be wrapped in heavy paper and put into muslin sacks. It is very important that the top of the sack be tied properly to keep insects out. Before the hams or strips of bacon are placed in the sacks, remove the strings from the hams. There is a great tendency to use the same strings to hang

up the meat after it is sacked as were used to hang it while smoking. It is impossible to tie the top of the sack and make it insect proof if a string from the meat passes through the paper and sticks out at the top. In tying the top of the sack make a double wrap before tying a knot, which will prevent the entrance of any insects. Each sack may then be painted with yellow wash, used to protect them, and hung up for future use. Never stack hams and bacons in a pile after yellow wash has been applied.

RECIPE FOR YELLOW WASH.

For 100 pounds hams or bacon use—

3 pounds barium sulphate.	1¼ ounces chrome yellow.
1 ounce glue (dry).	6 ounces flour.

Half fill a pail with water and mix in the flour, breaking up all lumps thoroughly. Mix the chrome yellow in a quart of water in a separate vessel, add the glue and pour both into the flour-and-water mixture. Bring the whole to a boil and add the barium sulphate slowly, stirring constantly. Make the wash the day before it is required. Stir it frequently while using, and apply with a brush.

DIRECTIONS FOR COOKING AN OLD HAM.

Soak several hours, thoroughly remove all mold and loose pieces, and rinse well.

Cover with cold water, add two tablespoonfuls of vinegar, one-half cup brown sugar, four cloves and one bay leaf, and heat to boiling. (The amount of cloves and bay leaf may be increased if desired, especially for larger hams.)

Reduce the heat to a constant simmer and allow to cook at this temperature at the rate of 20 minutes for each pound weight.

Remove from the fire, but keep the ham in the liquor in which it was cooked, until cold; then remove from the container and allow to drain.

Take off the skin, score the fat in inch blocks, and cover with a coating of brown sugar and crumbs. Stick with cloves 1 inch apart.

Bake in a slow oven until nicely browned, basting at intervals with one-half cup of water and one tablespoonful of vinegar.

SHIPPER'S CERTIFICATE.

Farmers who ship their cured meats must comply with official State and Federal regulations. Below appears a sample shipper's certificate such as must be used in interstate shipments of uninspected meat or meat food products which are from animals slaugh-

tered by the farmer on the farm. In providing blank certificates for the purpose this sample should be followed. In size it should be 5½ by 8 inches.

SHIPPER'S CERTIFICATE.

Date _____, *19*__.

Name of carrier _____

Shipper _____

Point of shipment _____

Consignee _____

Destination _____

I hereby certify that the following-described uninspected meat or meat food products are from animals slaughtered by a farmer on the farm, and are offered for transportation in interstate or foreign commerce as exempted from inspection according to the act of Congress of June 30, 1906, and at this date they are sound, healthful, wholesome, and fit for human food, and contain no preservative or coloring matter or other substance prohibited by the regulations of the Secretary of Agriculture governing meat inspection.

Amount and weight.

Kind of product_____ _____

_____
(Signature of shipper.)

_____
(Address of shipper.)

Two copies of this form to be presented to the common carrier with each shipment.

ECONOMIC SUGGESTIONS ON KILLING AND CURING.

Cleanliness is the most important factor in butchering and in curing meats. Meat very easily becomes tainted.

Save all pieces of meat for sausage. There are many ways of converting it into a palatable product.

All waste fat, trimmings, and skin should be rendered and the product used to make soap.

Bones should be crushed or ground for chicken feed.

Never put meat in to cure before the animal heat is out of it.

Always pack meat skin-side down when in the curing process, except the top layer in a brine cure, which should be turned flesh-side down.

Keep close watch of the brine, and if it becomes "ropy," change it.

Do not forget to turn or change meat several times during the curing process.

The fat of dry-cured meat sometimes becomes yellow, but that does not make it unwholesome.

It takes more time to smoke dry-cured than brine-cured pork.

Slow smoking is much better than rapid smoking, and there is less chance of causing the meat to drip.

If meat becomes moldy, brush off the mold with a stiff brush or trim the moldy parts off with a knife.

Be sure that meat is thoroughly cooled before sacking.

The seasoning of sausage is generally governed by taste.

Fresh sausage can be kept under a covering of lard for a number of days.

HOME CANNING OF PORK AND PORK PRODUCTS.

While the curing of meat with salt, followed by smoking, is in universal use and has been known as far back as records go, the canning of meats, although relatively new, has become one of the most important methods of food preservation.

This method has been made practicable by the introduction of small steam-pressure cookers, suitable for use in the home, and which make the process much more safe. By their use all kinds of home products, whether animal or vegetable, can be preserved successfully in an attractive, palatable, and economical way. On the farm, where often fresh meat can not be bought readily, the value to the housekeeper of such a supply of provisions always available can not be overestimated.

STEAM-PRESSURE COOKER OR CANNER NECESSARY.

For the successful canning of meats a steam-pressure cooker (fig. 16) is necessary, as only by its use can the required temperature for properly sterilizing meats be obtained. The needed temperature is 250° F., equivalent to steam pressure at 15 pounds per square inch.

The use of the pressure cooker in the household is not confined to canning, for with it daily meals can be prepared in much less time than by ordinary methods of cooking and its cost saved many times over.[3]

Canning meat without steam pressure is not safe on account of the danger of imperfect sterilization and consequent spoilage.

Meat can be canned in either tin or glass. With glass the very best quality of jar rubbers must be used, as meats will not keep if the rubber ring is cracked or damaged, so that air, and with it bacteria, can enter.

[3] Instructions for cooking meals in steam-presure cooker can be had from Office of Extension Work, South, States Relations Service, United States Department of Agriculture, Washington, D. C.

HOW TO USE THE STEAM-PRESSURE COOKER OR CANNER.

Pressure cookers should be of standard quality, constructed to maintain uniformly at least 15 or 20 pounds of pressure and be tested for considerably higher pressures to insure safety to the operator. The home steam-pressure cooker consists of a kettlelike receptacle with a lid that can be securely fastened, making a steam-tight joint. It is fitted with a gauge recording the steam pressure per square inch, generally expressed in pounds. A thermometer giving the inside temperature is sometimes attached. There must be a safety

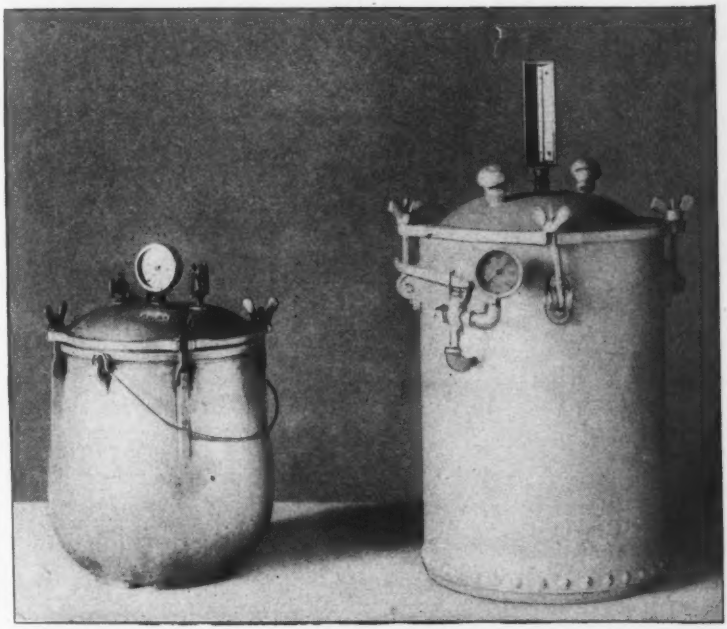

FIG. 16.—Two types of pressure cookers in common use.

valve for the escape of steam as soon as the pressure reaches a certain number of pounds per square inch. In some cookers this safety valve is adjustable as to the pressure reached before it "blows off." There must also be a pet cock through which air and steam can be let out, thus reducing the pressure to zero before opening the cooker; otherwise the person attempting to unfasten the cover may be seriously scalded.

When the women do the canning, and if it is desired also to use the pressure cooker in the preparation of daily meals, an aluminum pressure cooker may be preferred on account of not being so heavy to lift as those made of boiler steel.

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PREPARATION OF PORK FOR CANNING.

Handle all meats in a cleanly manner. As soon as the animal heat has disappeared the meat may be prepared for canning. It should always be cooked first—roasted, fried, broiled, baked, or stewed—just as though for immediate serving, so that the flavor can be largely retained (fig. 17). If raw meat is packed, the time for sterilization will have to be prolonged considerably and the can will contain boiled or steam-cooked meat. On the other hand, if the meat is roasted, fried, or otherwise prepared and hot gravy stock is added, the time required for sterilization will not be so long, and when the can is opened it will contain the roasted, fried, or otherwise prepared meat with the flavor of the freshly cooked product.

FIG. 17.—Hams in pan ready for roasting. Results are more satisfactory when meat is cooked before canning. Cooked meats improve in the processing, while raw meats become less attractive after processing and standing in storage.

Season the meat according to individual taste and cook it thoroughly. Whatever method is chosen, the meat should be cooked tender and not be red in the center.

From the hog carcass the head may be cleaned and used for headcheese and canned; the brains may be soaked in salted water to remove any blood, then fried or otherwise prepared, and canned. The tongue may be lightly salted, boiled, and canned with a little meat jelly added. The cleaned snout may be boiled, pickled, and canned. The feet, after scalding and thorough cleaning, may be boiled, pickled, and canned. The liver may be soaked in salted water and cleaned carefully; then, after the large veins have been removed, it should be sliced or diced and fried, used for liver sausage, or for liver paste, and canned. The kidneys, having been split open and the little sac in the center removed, should be soaked in several changes of salted water, sliced, and fried, or cut into cubes, stewed, and then canned. The large intestines may be cleaned, scalded, scraped, soaked in several changes of salted water, made into chitterlings, fried or boiled, and canned.

The heart should be cleaned from blood clots, the coarser veins removed, sliced, and made into goulash or spiced heart, or it may be sliced or diced, fried, and then canned. After the lard is rendered the remaining cracklings may be canned, if desired, for crackling bread. The clean skin, cut from the fat used for lard, should be soaked in several changes of cold water, then with just water enough added to cover the skin, cooked for one hour at 10 pounds' pressure. The liquid should then be strained through a double layer of cheesecloth and allowed to cool. When cold the grease can be easily removed from the top and the resulting stock will be thick enough to jelly. It can be reheated and canned like soup and later be used as gelatin for puddings, etc., or it can be used as addition to soups and gravies. The thoroughly boiled skin can be chopped up and mixed with other meat scraps for use in making scrapple or similar dishes.

The bones cut from the fresh meat or from the roasted meat may be utilized for soup stock, although they will not give so much or so rich a soup as that made from beef. The soup stock may be canned. The hams, shoulders, tenderloin, backbone, and spareribs may be roasted, sliced, and packed in cans. (The bones should be removed before canning.) Add hot gravy stock to fill all spaces between the meat pieces. Seal and process. Sausage, made from pork, may be put into casings or made into little cakes, fried and canned. The side meat and fatback may be cured or salted and kept in this way. If the cured bacon or side meat does not keep well through the summer, as sometimes happens in the warmer parts of the country, it may be sliced about one-fourth inch thick, dipped in beaten eggs, and fried to a nice brown color, then packed in cans and processed like other cooked meat.

In some places the blood of the butchered hog is used as food. The blood is first beaten with an egg beater or mayonnaise beater as soon as taken from the butchered animal. It is then strained and mixed with barley or hominy grit, a little finely diced fat pork, some milk, raisins cleaned and scalded, sugar, and spices. It is then put into well-cleaned casings until half full, after which the casings are tied or sewed at the ends and slowly boiled in plenty of water for 1½ hours. The blood may also be made into blood pudding. Either the blood sausage or pudding may be canned.

Thus every part of the hog suitable for human food may be saved and canned; the by-products, which too often are wasted in ordinary farm butchering, may more than pay for the extra labor and the containers needed for canning all the animal

CONTAINERS.

Some people prefer to use glass jars for containers, although tin cans are used in many homes, especially in the Southern States. If

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glass jars requiring rubber rings are used the highest quality of rings should be procured. With hermetic-seal jars, be sure that the sealing composition on the cap is unbroken. For some jars it is necessary to use a special machine to put the cover on and seal the jar.

CANNING IN TIN CANS.

There are two types of tin cans in general use, the "cap-and-hole" can and the "sanitary" can. Either of these may be had as plain tin cans or inside-lacquered tin cans. If an acid, like vinegar, has been used in the preparation of the meat to be canned, the inside-lacquered can should be used.

For sealing the cap-and-hole can it is necessary to use a capping steel and a tipping copper. The capping steel must correspond in size to the hole in the can and should fit the cap to be used. A suitable apparatus for heating these irons is needed, and some solder and flux must also be provided.

For the sanitary cans it is necessary to have a mechanical sealer (for home use a hand sealer may be used) by which the whole top is put on in one operation.

To make flux.—Put some commercial muriatic acid into a glass or crockery vessel (a metal container will not do), add strips of sheet zinc (old zinc jar tops from which the glass lining has been removed will do) until no more can be dissolved. Add to this an equal quantity of water and strain through a piece of muslin. This is called flux and should be used with care. When canning, have some flux in a saucer or other container in which to clean the soldering tools. Keep separately in a glass bottle, properly labeled, the quantity which will be needed for sealing the cans.

Capping steel and copper.—Capping steel and copper should be kept coated with solder in order to make the solder flow evenly when sealing. It may be necessary to clean them with coarse sandpaper or even with a file, but care must be taken to see that the edges are kept true. For coating the steel and copper with solder prepare a handful of powdered sal ammoniac mixed with a few pieces of solder and put into a can. Heat the already smoothed capping steel or tipping copper until almost red hot, dip into the flux and then into the sal ammoniac and solder, turning it about and rubbing until bright and well coated with solder, then dip in the flux again.

Filling the cans.—Tin cans must be washed clean in warm water, rinsed, and then with the caps immersed from 10 to 15 minutes in boiling water to remove all dirt or chemicals that may be clinging to the tin. Remove from the water and drain. Never use rusty cans. If sanitary cans are used, the tops must not be put into water, but

should be wiped with a damp cloth just before putting them on the cans and sealing them.

Cut the meat into sizes according to can openings and pack in the cans (fig. 18), filling them within one-half an inch of the top, then pour in boiling hot gravy to fill all spaces between the slices of meat (fig. 19). Do not fill can entirely full, but leave from one-fourth to one-half inch of space at the top of the can. If there is not gravy enough, boiling water or soup stock may be added. Wipe the can top absolutely clean, and especially the grooves around the opening, which must be entirely free from grease. It is best to use a small piece of cloth dipped in boiling water for removing the grease. Wipe dry with a clean cloth.

FIG. 18.—Packing meat in cans.

Sealing the caps in place.—Wipe the caps and place them on the cans. Apply flux carefully around the edge of cap in the groove with a small brush or a little mop made by tying a small piece of cloth around a small stick. The flux is used to make the solder adhere to the tin. Apply the clean, hot, capping steel, holding the cap in place with the center rod. As the steel is lowered turn steadily until the solder flows, hold the rod firmly and lift the steel with a sudden twist to swing the melted solder around the groove evenly. Keep the center rod on the cap until the solder sets, which will take only a few seconds.

Exhausting.—Exhausting is driving out the surplus air before completely sealing the can. This is done to prevent possible swelling of the can from the expansion of the air, which might cause it to be taken for a "swell" indicating spoilage due to bacterial action. Furthermore, the presence of air may cause the canned material to

act on the tin and produce salts of tin, which are objectionable from the standpoint of health. If cold meat is placed in the cans, it will always be necessary to exhaust. Place the cans in a wire tray and lower into boiling water to within 1 inch of the top for from 5 to 8 minutes, or just long enough to cause the contents of the can to be heated to 180° F. Exhausting is not necessary, however, if meat is placed hot in cans and boiling gravy added, as the steam from the hot gravy will drive out the air, and the cans should then be sealed at once. When sanitary cans are used the exhausting is done before the top is put on.

Tipping.—Close the small hole in the cap immediately after exhausting or, if filled with hot meat and gravy, immediately after capping. Apply flux as for capping and use a little wire solder (bar

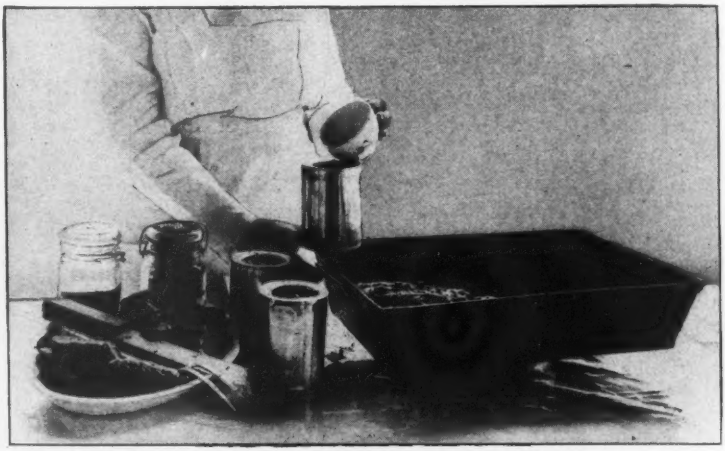

FIG. 19.—Adding gravy to meat in cans.

solder can be used in case the wire solder is not at hand). Hold the solder with the left hand near the hole and barely touch with the hot copper after it has been dipped in the flux, so that only a bead will drop and cover the hole.

Testing for leaks.—As it is essential that the soldering shall completely seal the cans, it is necessary to test the cans before processing (sterilizing) in order to be sure there are no leaks. If the cans have been filled too full or a piece of meat touches the top, it is almost impossible to seal effectively, and little pinholes will be formed in the melted solder. The center rod of the capping steel should never be so pointed that it closes the little venthole entirely when sealing a can containing hot liquid, because the steam formed is liable to escape through the melted solder and thus cause pinholes. Test by submerging the cans in boiling water. If little air bubbles come

through, there are leaks and the can must be resoldered before processing.

Processing.—Processing is the sterilizing of the cans after sealing. Pour boiling water into the steam-pressure cooker until it rises nearly to the level of the rack, but not over it (generally to a depth of from 1 to 1½ inches in the small home pressure cookers). Place the cooker over the fire so that the water will boil vigorously, put the cans to be sterilized into the crate that is furnished with the cooker (or place directly on the rack in the canner), lower this into cooker, put the cover on, and screw down the clamps so that the cover is steam tight. Leave the pet cock open until steam escapes, then partly close, so that only a very small amount of steam escapes. If the safety valve is adjustable, adjust it to "blow off" at the pressure desired, generally 15 pounds at least. Raise the temperature by means of a quick fire until the gauge on the cover of the retort shows 15 pounds of steam pressure. Count time (in accordance with the recipes given later) from the moment this pressure has been reached, which is equal to a temperature of 250° F. This temperature kills the spores of all varieties of bacteria that are destructive to canned meats. A lower fire will now keep the heat up. Keep the temperature uniform at 250° F., or 15 pounds' pressure, until the time for processing is up; then before unfastening the clamps that hold the cover down open the pet cock or safety valve to let all steam escape. When the gauge shows no pressure, unfasten the clamps, take off the cover, and lift out the cans. The cans are now sterilized. Test for leaks by one of the several methods used for this purpose. For instance, while the cans are hot place them on the floor and tap each one with a little stick. A tight can will give a clear, ringing metallic sound; a leaky can a dull sound. If leaks are found, the cans must be resoldered and again processed. Immerse the sealed cans in cold water to cool quickly and stop the cooking.

CANNING IN GLASS JARS.

For canning in glass the jars are washed clean and put into cold water in a vessel with a false bottom of slatted wood, heated to the boiling point, and kept boiling from 10 to 15 minutes. Then fill (within one-half inch of top) with meat and gravy in just the same way as in the case of tin cans. Adjust the rubber and put the lid in place. If screw-top jars are used, put the top in place but do not screw it down tight (leave about half a turn loose). For glass-top jars, adjust the rubber and glass top. See that the spring is not too loose. Put the wire clamp over the top, but do not press down the spring. For glass tops fastened with a screw ring, fasten the top in position but do not make perfectly tight. When hermetic-seal cans are used, seal as with other jars. Adjust the metal cap, which has a

sealing composition on the inside of the lid (be sure that the sealing composition is even all around the lid, as a leak will appear if the composition is broken in places). Adjust the clamp to hold the lid in place and put into the canner.

Exhausting is not necessary with glass jars, except when they are sealed by a special machine before being processed, as the heating will force the excess air out around the lid. When glass jars are processed the cooker should not be heated so high that steam "blows off" through the safety valve, since this will cause a difference in pressure between the steam on the outside of the jar and that inside the jar, resulting in a part of the contents being forced out or the rubber being pushed out of place. The temperature, of course, must be high enough to sterilize the contents, which, for meats, is equivalent to not less than 15 pounds of steam pressure. At the end of the period of sterilization do not let the steam escape from the cooker, but turn out the fire or lift the vessel from the fire and let it cool until the steam gauge shows that there is no more pressure. Then open the pet cock, unfasten the clamps, remove the cover, and lift out the jars carefully, avoiding any draft, as cold air striking them is likely to cause breakage. Seal immediately by fastening the lid or pressing down the wire springs (the hermetic-seal jar does not need any attention), and allow to cool in a place free from draft. When cold, test for leaks. If any are found the products will have to be resterilized at the temperature and for the time given for regular sterilization. The rubber may also have to be changed before resterilization.

RECIPES FOR CANNING PORK.[4]

The following recipes are given to show how pork products can be prepared and canned in the home. The recipes are merely guides and may be changed to suit the individual taste. The time and temperature given for the processing period, however, should not be changed, as any reduction in either may result in insufficient sterilization and consequent spoilage of the product. It is also *necessary that nothing but absolutely fresh and cleanly handled meats be used.*

In these recipes the time is given for tin cans. Pint glass jars require the same time for processing as the No. 2 tin cans, and quart jars the same time as the No. 3 tin cans.

ROAST PORK.

Select a piece of pork for roasting—generally the ham, shoulder, or loin—scrape skin clean, and wipe with a damp cloth. If the ham

[4] For information on canning beef, poultry, fish, etc., write to the Office of Extension Work, South, States Relations Service, Washington, D. C., for Circular "A" 92, "Home Canning of Meats and Sea Foods with the Steam Pressure Canner."

is used and skin is left on, cut with point of knife just through skin so as to dice skin, and trim with some cloves and little tufts or parsley (if desired). Salt and pepper to taste should be sprinkled over the ham. For a ham weighing 8 to 10 pounds use 1 to 2 tablespoons of salt and from one-half to 1 teaspoon of pepper. Heat in a roasting pan from 2 to 3 tablespoons of grease. When hot put in the roast and sear quickly all over to seal the pores and prevent loss of the juice of the meat. Add 2 small turnips to the roasting pan and one-half to 1 cup of boiling water. Leave skin-side up (do not turn) and baste frequently.

If skin and fat are removed from ham before roasting, lard with narrow strips of larding pork, alternating with rows of little tufts of parsley. Add one small turnip, one small root of celeriac, a few

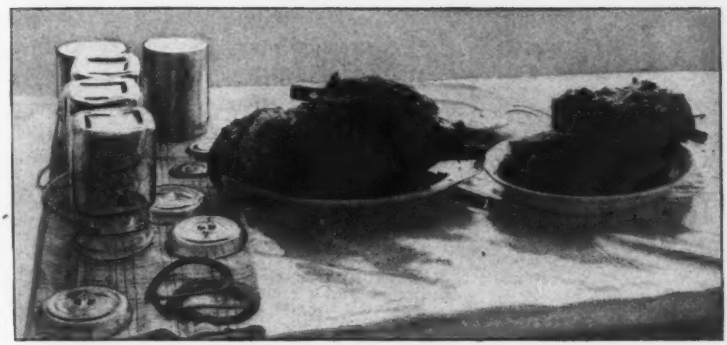

FIG. 20.—Cooked hams ready to be canned.

cloves, and five or six whole peppercorns to roasting pan. Meat may be rubbed with cloves of garlic if desired. Season as in recipe above. Baste frequently.

When cooked through and nicely browned, slice and pack in cans to within one-half inch of top of can. Add the gravy from the roasting pan, with boiling water or soup stock added, so that it barely covers the meat. (There must be at least one-fourth inch space between gravy and top of can.) Cap (exhaust 5 minutes if meat and gravy have cooled; if cold, exhaust 10 minutes; if hot, exhausting is not necessary), tip (seal sanitary cans in machine), and process in steam-pressure cooker as follows:

No. 1 cans, 40 minutes at 250° F., or 15 pounds of steam pressure.
No. 2 cans, 45 or 50 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 55 or 60 minutes at 250° F., or 15 pounds of steam pressure.

In case meat is fat, time for processing must be prolonged 10 minutes. Backbone may be roasted in a similar way; cut meat from bones and can as already stated.

SPARERIBS.

Roast the spareribs in the usual way, seasoning to taste. Cook until done, browning them nicely. With a sharp knife cut down the inside of each rib, remove the rib bone, and cut the meat into pieces that can pass through the can opening. Make gravy stock by adding water to the pan grease. Pack meat in cans and add the boiling hot gravy stock to within one-half inch of top of can. Cap, tip (seal sanitary cans), and process as follows:

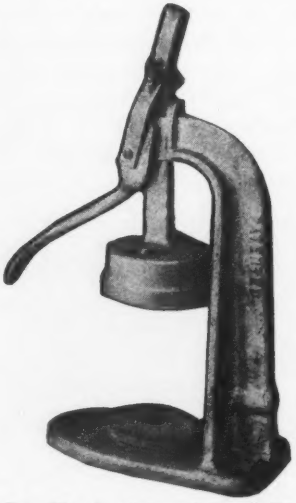

FIG. 21.—A common type of jar sealer.

No. 2 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 60 minutes at 250° F., or 15 pounds of steam pressure.

Spareribs may also be broken in the center with a cleaver or an ax (do not cut apart), folded together, and the opening between the ribs filled with pared, sliced apples and a few washed and soaked prunes. Then tie or sew together at edge, season to taste, and roast until done. Cut in suitable pieces and pack in cans with part of the cooked apples and prunes. Add gravy stock, boiling hot from the roasting pan. Seal and process as above if bones are removed. If bones are left in, process as follows:

No. 2 cans, 75 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 90 minutes at 250° F., or 15 pounds of steam pressure.

PORK TENDERLOIN.

The tenderloin may be canned separately. Remove from carcass, wipe with damp cloth, and sear quickly in hot grease. Then season according to taste and roast until nicely browned. Cut in can lengths and pack into cans. Add hot gravy stock, prepared from pan grease with soup stock or hot water added, to within one-half inch of top of can. Seal at once, or, if packed cold, exhaust before sealing. Process:

No. 2 cans, 50 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 65 minutes at 250° F., or 15 pounds of steam pressure.

The tenderloin may also be prepared as directed and packed in cans together with suitable vegetables (first boiled and seasoned), then sealed and processed as given above.

PORK CHOPS.

The chops are quickly seared in hot grease, salt and pepper (to taste) are added, and they are cooked until done and nicely browned. The bone may be removed and a short piece of boiled macaroni substituted. Then pack into cans about half full and fill in with boiled string beans, spinach, sauerkraut, or small, nicely browned potatoes. If desired, some gravy stock may be added. Exhaust 5 minutes, seal, and process.

No. 2 cans, 60 minutes at 250° F., or 15 pounds of steam pressure.

No. 3 cans, 75 minutes at 250° F., or 15 pounds of steam pressure.

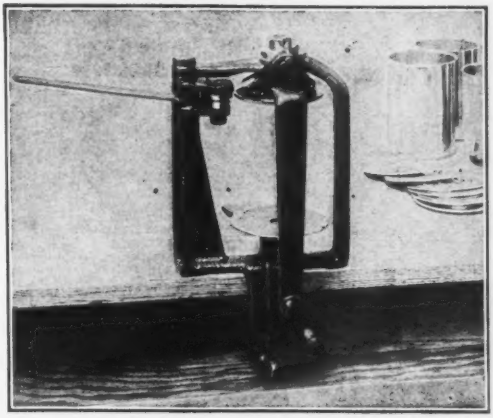

FIG. 22.—Small hand sealer for No. 2 cans.

In case it is preferred to leave the pork rib on the chop, when packed in the cans, add 15 minutes to the processing period given above.

TONGUE.

Tongues may be cleaned, salted, and lightly smoked, then boiled, skins removed, and packed in cans with a little soup stock or meat jelly added. They may also be cleaned thoroughly, rubbed heavily with salt, and left standing with salt sprinkled over them for 8 to 10 hours. Then boil until done, remove the skin, and pack in cans with a little of the liquid in which they were boiled (thinned with some boiling water in order not to be too salty). In either case cap, tip, and process:

No. 1 cans, 40 minutes at 250° F., or 15 pounds of steam pressure.
No. 2 cans, 50 minutes at 250° F., or 15 pounds of steam pressure.

BRAINS.

The brains should be soaked in several changes of cold water to draw out the blood, and the membranes removed. The brains may then be fried in hot grease, sprinkled with salt and pepper, packed in No. 1 flat cans, and the grease in which the brains were fried, thinned with a little hot water, added. Cap, tip, and process:

No. 1 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.

HEADCHEESE.

Cut a hog's head into four pieces. Remove the brains, ears, skin, snout, and eyes. Cut off the fattest parts for lard. Put the lean and bony parts to soak overnight in cold water in order to extract the blood and dirt. When the head is cleaned put it over the fire to boil, using water enough to cover it. Boil until the meat separates readily from the bones. Then remove from the fire and pick out all the bones. Drain off the liquor, saving a part of it for future use. Chop the meat fine with a chopping knife. Return it to the kettle and pour on enough of the liquid to cover the meat. Let it boil slowly for 15 to 30 minutes. Season to taste with salt and pepper just before removing it from the fire. Bay leaves, a little ground cloves, and allspice may be added and boiled for awhile in the soup. It not condensed enough to form jelly, a little gelatin may be dissolved in cold water and mixed well with the cheese just before filling into the cans. Pack while hot in cans to within one-half inch of top. Cap, tip, and process:

No. 2 cans, 50 minutes at 250° F., or 15 pounds' pressure.

When ready to serve, thoroughly chill the can before opening. Serve cold.

KIDNEYS.

The kidneys after being split open and the little sack inside removed should be soaked in several changes of lightly salted water. They should be cut into slices about one-fourth to one-half inch thick, lightly seared in hot grease, sprinkled with salt and pepper, and fried to a brown color. Then pack in cans with onions that have been peeled, sliced, and nicely browned in hot grease. Then pour in hot gravy made from adding water to the pan grease until the can is filled to within one-half inch of top. Cap, tip, and process.

No. 2 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 55 minutes at 250° F., or 15 pounds of steam pressure.

Kidneys may also be prepared as a stew or ragout and filled hot into cans. Cap, tip, and process for same length of time as for fried kidneys.

BOLOGNA-STYLE SAUSAGE.

To each 10 pounds of lean beef use 1 pound of fat pork, or bacon, if preferred. Chop fine and season with 1 ounce of salt to each 4 pounds of meat, 1 ounce of the best black pepper (ground, pure) to each 6 pounds of meat, and a little ground coriander. Stuff into casings called beef "middles" or beef "rounds," and smoke for 10 to 12 hours. Cook in boiling water until the sausages float. Take up the

sausage, cut in can lengths, pack into cans and add hot liquid, in which the sausages were cooked, to within one-half inch of top. Cap, tip, and process:

No. 2 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.

PURE PORK SAUSAGE.

An excellent pork sausage may be made by using three parts of fresh lean pork to one part of fat pork. Cut into small pieces and pass through meat grinder, using a rather coarse plate. Weigh the meat, and for 25 pounds add one-half pound salt, one-half ounce fine sage, one-fourth ounce ground nutmeg, and from one-half to 1 ounce of black pepper. Mix thoroughly and pass again through meat grinder, using a small plate. Form into little round or flattened cakes and fry in deep fat until nicely browned. When several panfuls have been cooked, pour off the grease and add water to the brown parts in bottom of pan to make gravy stock. Add this while hot to the packed cans. Return the grease to pan and cook another panful of sausage cakes. When packed hot, seal cans (partly seal glass jars), and process:

No. 2 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 55 minutes at 250° F., or 15 pounds of steam pressure.

Sausage cakes may also be canned without any liquid gravy stock added. Pack cans to within one-half inch of top of can. Exhaust from 3 to 5 minutes, seal, and process:

No. 2 cans, 75 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cons, 90 minutes at 250° F., or 15 pounds of steam pressure.

PORK CAKES.

Use the following ingredients:

4 pounds lean pork.
2 pounds fat pork.
2 or 3 tablespoons salt (or salt to taste).
1 teaspoon black pepper.
1 teaspoon red pepper.
1 teaspoon Chile pepper (to taste).
½ teaspoon allspice.
2 or 3 teaspoons sage (or poultry seasoning).
½ to 1 teaspoon thyme.
2 large onions, minced.
1 clove garlic, minced (may be omitted).
2 bay leaves, powdered or broken into small pieces.
1 teaspoon celery seed, crushed (may be omitted).
6 to 12 tablespoons dry, finely chopped bread or cracker crumbs.
2 eggs beaten together.
½ cup to 1 cup of sweet milk.

Knead well, form in cakes, fry in deep fat until nicely browned, pour off excess of grease, add water, and make gravy. Two or three cookings may be made in one lot of grease. Pack in cans, fill in with hot gravy to within one-half inch of top of can. Cap, exhaust 5

minutes (exhausting is not necessary if packed hot in cans and sealed at once). Tip, and process:

No. 2 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 55 minutes at 250° F., or 15 pounds of steam pressure.

LIVER SAUSAGE.

Remove the membrane and cut away the large blood vessels. Soak in water 1 to 2 hours to draw out blood. Boil until done. When cooled put through a food chopper or grate fine. Take half as much boiled fat pork as liver. Divide this fat into two portions; chop one portion into ¼-inch cubes; pass the other portion through the food chopper; mix all together thoroughly; add salt, ground cloves, pepper, and a little grated onion to taste. A little thyme and marjoram may be added to suit taste. (For a liver weighing 3 pounds add 1½ pounds fat pork, from 6 to 8 teaspoons salt, 1 teaspoon cloves, 1 teaspoon pepper, 2 small onions, ½ teaspoon thyme, and pinch of marjoram.) This mixture is stuffed into large casings (if no casings are available, make casings of clean white muslin). Cover with boiling water, bring to a boil, and boil for 10 minutes. Pack in cans and fill in with the water in which the sausages were boiled. Cap, exhaust 5 minutes if cooled(if packed hot, exhausting is not necessary), tip, and process:

No 2 cans, 50 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 65 minutes at 250° F., or 15 pounds of steam pressure.

This liver sausage may also be made from the raw liver and raw pork. In that case proceed in same manner as just described, but process the cans 10 minutes longer at temperature given. It may be served hot or cold.

HOG-LIVER PASTE.

1 medium-sized liver (about 3 pounds).
1½ pounds fresh fat pork.
½ pound butter.
½ pound flour.
1 teaspoon pepper.
1 teaspoon ground cloves.
1 small onion, grated.
3 eggs.
Milk (as needed).
Salt to taste.

The fat is chopped very fine. The butter and flour are rubbed together in a kettle placed over the fire, then thinned with milk to a very soft gruel. Into this put the chopped fat. Cook over a very slow fire, in order not to scorch, until fat is pretty well cooked out.

In the meantime get the liver ready. Wash well, remove the skin, and cut away all veins and membranes. Scrape or pass through a meat grinder, then place this mass on a fine sieve or strainer. Into it pour the warm thickening little by little and together with the liver rub through. Into this liver mass as passed through the sieve stir 3 yolks of eggs, 1 teaspoon pepper, 1 teaspoon ground cloves, plenty

of salt (about 2 tablespoons or more, according to taste), 1 small grated onion, and the beaten whites of the 3 eggs. Put into cans that must not be entirely full. Cap, exhaust from 5 to 8 minutes, tip, and process:

4-ounce glass jars, 40 minutes at 250° F., or 15 pounds of steam pressure.
No. 1 flat tin cans, 45 minutes at 250° F., or 15 pounds of steam pressure.

A very good liver paste can be made by taking liver and fat pork, as in recipe above, pass through meat grinder twice, stir well with 2 tablespoons salt, 1 teaspoon pepper, 1 teaspoon ground cloves, 1 finely chopped medium-sized onion, 6 tablespoons cracker or dried-bread crumbs, 3 eggs beaten together, and one-half cup of sweet milk. Fill into cans; cap, exhaust, tip, and process as stated.

GOULASH.

2 pounds cleaned pork heart.
2 ounces butter or any good fat.
2 onions (medium size) chopped fine.
1 carrot (medium size) finely sliced.
1 stalk celery cut in small pieces.
1 pint tomatoes (canned or fresh).
1 bay leaf, broken in pieces.
6 whole cloves.
6 whole peppercorns.
1 blade mace.
1 pinch thyme.
1 tablespoon parsley (finely chopped).
Salt and pepper to taste.
Paprika to taste.
A little flour.

Cut the hearts into 1-inch cubes and sprinkle with flour mixed with salt and pepper. Melt butter or fat in a frying pan. When hot add the chopped onions, carrot, and celery, and brown lightly. Add the meat, prepared as stated, and brown while stirring frequently with a spoon to prevent scorching. When nicely browned empty into a stewpan, add bay leaves, cloves, peppercorns, mace, and thyme tied up in a little bag of cheesecloth, also tomatoes or tomato purée. Cover with soup stock or water and simmer for 45 minutes (for 2 hours if to be served at once and not canned). Remove the bag of spices and season by adding salt, pepper, and paprika to taste. Soy or Worcestershire sauce may be added in small quantities if desired. Add the parsley. Fill hot into cans, seal at once, and process:

No. 2 cans, 50 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 60 minutes at 250° F., or 15 pounds of steam pressure.

If the different ingredients in this recipe are not at hand, a good goulash may be made by using meat, fat, onions, tomatoes, flour, salt, and pepper, leaving out the other ingredients.

SCRAPPLE.

The cleaned head, feet, all bones cut out of fresh or cooked meat with what meat clings to them, the liver, heart, and all meat scraps not otherwise used may be utilized for making scrapple. Put over

the fire in cold water enough to cover, bring to a boil, and cook until meat falls from the bones. The cleaned skin cut off when preparing the fat for rendering lard can also be used. Put it into the steam-pressure cooker on top of rack and add cold water to cover the skin. Cook at 10 to 15 pounds' steam pressure for one hour. The bones, head, feet, liver, etc., also may be cooked under steam pressure, whereby considerable time is saved, but should not be cooked together with the skin, as it will be more difficult to separate the small pieces of bones when mixed with the cooked skin. Strain the resulting liquid or soup from the bones and from the skin. If too greasy, part of the fat may be skimmed off. Carefully pick out all bones from the meat. Then chop the meat and boiled skin fine and return to the soup. Put over the fire again and bring to a boil. Season to taste with salt and pepper (generally $2\frac{3}{4}$ ounces of salt and one-half ounce of pepper for each gallon of liquid). To this boiling soup and meat add slowly under constant stirring, to prevent lumpiness, a mixture of corn meal, buckwheat flour, and wheat middlings until it is as thick as mush. (The mixture is in the proportion of 50 parts of fresh corn meal, 25 parts of buckwheat flour, and 25 parts of clean wheat middlings.) Stir vigorously while the scrapple is allowed to cook for from 10 to 15 minutes. Remove from fire and pour hot into cans to within one-half inch of top. Seal at once and process:

No. 2 cans, 50 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 70 minutes at 250° F., or 15 pounds of steam pressure.

The scrapple should be removed from the can, sliced, and browned in a frying pan before serving.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1921

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U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 1186 rev.
Nov. 1924

Rev. ed. follows

PORK ON THE FARM

KILLING CURING AND CANNING

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EVERY FARM should produce the pork and pork products which are consumed on that farm.

Selling hogs and buying pork involves profits, but not for the farmer engaged in the practice.

Home curing of pork is an old practice. It nearly went out of style, but the style is rapidly becoming popular again.

Home-cured pork, fresh-canned pork, sausage, pudding, scrapple, headcheese, pickled pigs' feet, and lard afford a variety of products to supplement the daily meals.

Preparations of highly nutritious and palatable pork products for home use are easily made.

This publication discusses the details of converting the farm-grown hog into high-class, appetizing, nutritious foods available for use in the fresh, cured, or canned state at any season of the year.

Washington, D. C.

Issued February, 1921; slightly revised May, 1921
Slightly revised September, 1922, and November, 1924

PORK ON THE FARM

KILLING, CURING, AND CANNING[1]

F. G. ASHBROOK, *Junior Animal Husbandman*, and G. A. ANTHONY, *Lay Inspector, Bureau of Animal Industry*, and FRANTS P. LUND, *Office of Cooperative Extension Work*

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KILLING AND CURING

By F. G. ASHBROOK and G. A. ANTHONY, *Bureau of Animal Industry*

MEAT ANIMALS, especially hogs, may be raised and the meat cured at home for much less than the cost of purchased meat. A market for good country-cured hams, shoulders, and sides is easily found. In spite of these facts, however, the practice of purchasing cured meats has increased among farmers. It may not be practicable for every farmer to butcher and cure the meat from all the hogs he grows, but in nearly every community a few farmers could do it and make good profits. Farmers who sell country-cured meats have very little difficulty in establishing a permanent trade. To accomplish it one must understand the kind of cured meat the trade demands. A well-marbled, juicy, savory piece of meat showing the proper admixture of fat and lean, properly cured and possessing a good flavor, is the kind the consumer desires.

SELECTION OF HOGS FOR BUTCHERING

HEALTH

In selecting hogs for butchering, health should have first consideration. Even though the hog has been properly fed and carries a prime finish, the best quality of meat can not be obtained if the animal is unhealthy; there is always some danger that disease may be transmitted to the person who eats the meat. The keeping quality of the meat is always impaired by fever or other derangement.

[1] This bulletin supersedes Farmers' Bulletin 913, Killing Hogs and Curing Pork.

NOTE.—Mr. Ashbrook resigned February 1, 1921.

CONDITION

A hog in medium condition, gaining rapidly in weight, yields the best quality of meat. Do not kill a hog that is losing flesh. A reasonable amount of fat gives juiciness and flavor to the meat, but large amounts of fat are objectionable.

QUALITY

The breeding of animals plays an important part in producing carcasses of high quality. Selection, long-continued care, and intelligent feeding will produce meat of desirable quality. Smooth, even, and deeply fleshed hogs yield nicely marbled meats.

AGE FOR KILLING

The meat from very young hogs lacks flavor and is watery, and that from old hogs generally is very tough. However, if old hogs are properly fattened before slaughter, the meat will be improved. Hogs may be killed for meat any time after 8 weeks of age, but the most profitable age at which to slaughter is between 8 and 12 months.

TREATMENT BEFORE SLAUGHTER

Hogs intended for slaughter should not be kept on full feed up to the time of killing. It is better to hold them entirely without feed for 18 or 24 hours prior to that time, but they should have all the fresh water they will drink. This treatment promotes the elimination of the usual waste products from the system; it also helps to clear the stomach and intestines of their contents, which in turn facilitates the dressing of the carcass and the cleanly handling and separation of the viscera. No animal should be whipped or excited prior to slaughter.

EQUIPMENT FOR SLAUGHTERING

It is essential to have the proper equipment for rapid and skillful work at killing time: A straight sticking knife, a cutting knife, a 14-inch steel, a hog hook, a bell-shaped stick scraper, a gambrel, and a meat saw. (Fig 1.) More than one of each of these tools may be necessary if many hogs are to be slaughtered and handled to best advantage. A barrel is a convenient receptacle in which to scald a hog. The barrel should be placed at an angle of about 45 degrees at the end of a table or platform of proper height. The table and barrel should be fastened securely to protect the workmen. A block and tackle will reduce labor. All the tools and appliances should be in readiness before beginning.

KILLING AND DRESSING

Ordinarily it is not necessary to stun or shoot a hog before sticking, although sometimes it is done. If the hog is stuck without being stunned, it should be squarely on its back when stuck. Two men can reach under and grasp the legs on the side of the body opposite to them and with a quick jerk turn the hog on its back.

One man can stand astride the body with his legs just back of the hog's shoulders, taking a good grip on the forelegs. (Fig. 2.) In this position the hog can be held in place while the other man does the sticking.

STICKING

A narrow, straight-bladed knife (see E in fig. 1) serves well for sticking a hog. The knife should be pointed directly toward the root of the tail and held in a line with the backbone. Thrust the knife in directly in front of the breastbone, and keep in a straight line so as not to stick a shoulder, causing blood to clot, which results

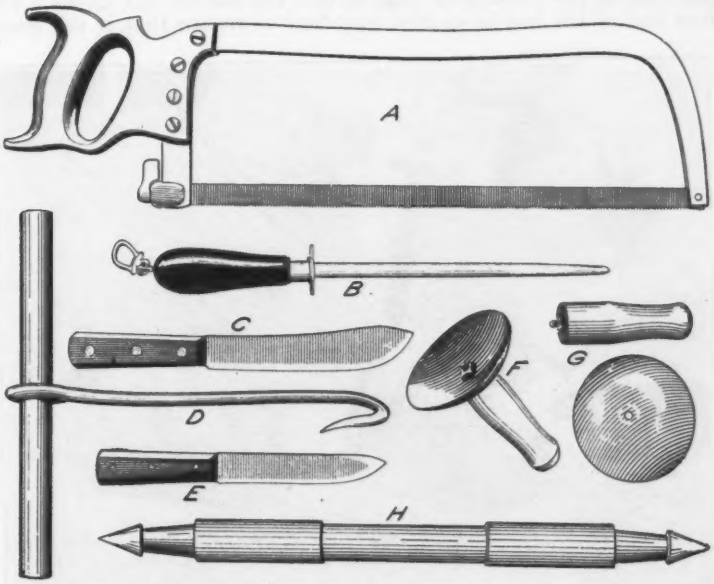

FIG. 1.—Tools for killing and dressing hogs. *A*, meat saw; *B*, 14-inch steel; *C*, cutting knife; *D*, hog hook; *E*, 8-inch sticking knife; *F*, bell-shaped stick scraper; *G*, separate parts of stick scraper; *H*, gambrel.

in waste in trimming or a shoulder which keeps poorly. After the knife has been inserted 6 or 8 inches, turn it and withdraw. This severs the vessels in the neck and insures better bleeding. Avoid sticking the heart, for in that case the blood will be pumped from the arteries. After sticking, the hog may be released; but preferably the animal may be strung up by a hind leg to facilitate thorough bleeding.

SCALDING AND SCRAPING

The most convenient vessel in which to heat water for scalding is a large caldron or a kettle, which should be located near the place of butchering. If the water is heated in the house, it should be boiling when removed from the stove. If the hog is not too large, a barrel may be used for scalding. The arrangement for most efficient scald-

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ing is shown in figure 3. If the barrel is not large enough to accommodate the hog, a blanket or several sacks may be laid over the carcass and scalding water poured over it. The blanket or sacks will retain the moist heat long enough to loosen the hair.

At the time the hog is scalded the water should have a temperature of from 145° to 155° F. If the water is too hot the hair may be set, causing even more trouble than if too cold. A teaspoonful of lye or a small shovelful of wood ashes added to every 30 gallons of water will aid in removing the scurf. After adding either of these materials the water should be stirred thoroughly.

If the barrel is used, insert the hog hook in the lower jaw, place the hog on the table, and slide it into the barrel. (Fig. 3.) The rear end of the hog is scalded first for the reason that if the water

FIG. 2.—Position for sticking the hog

is too hot and the hair sets it can be removed more easily from the rear than from the forepart. The hog should be kept moving in the water to be sure that no part rests against the side of the barrel. Occasionaly the hog should be drawn out of the water to air, when the hair may be "tried." When the hair and scurf easily slip from the surface, scalding is complete. The same test for determining whether scalding has continued long enough may be used when blankets or sacks are used, and the dressing of the carcass should also proceed in the same manner. Pull the hog out upon the table and quickly remove the hair and scurf from the legs and feet. The simplest way to do this is to twist the legs in both hands. Use the hog hook to remove the dewclaws while they are still hot. Remove the hair and scurf from the rear end of the hog by means of a bell-shaped scraper.

Cut the skin lengthwise for about 3 or 4 inches just below the hocks in both hind legs. Loosen the tendons in each leg and insert the gambrel. Scald the front part of the hog and pull it out on the table as before. Remove the hair and scurf immediately from the ears, forelegs, and head, as those parts cool very quickly. Use the bell-shaped scraper to remove the remaining hair and scurf. If the hair fails to yield in any particular part, cover that portion with a gunny sack and pour on hot water. When most of the hair and scurf is removed, pour hot water over the entire carcass and by means of a knife shave off any hair that is left. Hang the hog up, pour a bucketful of cold water over it, and scrape off the remaining dirt or scurf. Much of the heavy labor may be avoided by use of a hoist, such as a block and tackle, for lifting the hog.

FIG. 3.—A convenient arrangement for scalding

REMOVING ENTRAILS

After the hog is hung up and the surface is clean the next step is to remove the entrails. Cut through the mid line, beginning at the top, and continue cutting down to the head. Cut around the rectum on each side and pull it out between the pelvic bones.

Place the knife between the first and second fingers of the left hand, inserting the fingers where the opening has been made, and with the right hand carry the knife down the body and force through the breastbone to the opening in the neck. The fingers will serve as a guide in making the cut and will protect the intestines. When the opening has been made, remove the fat which surrounds the stomach. Remove the intestines, stomach, and gullet in one operation, thus preventing contamination of the carcass by the stomach contents. Remove the pluck, consisting of the heart, lungs, and windpipe, after cutting the diaphragm, which is the membrane that

separates the organs of the chest from the stomach, bowels, and other abdominal organs. By cutting between the light and dark portions of the diaphragm and continuing down along the backbone the entire pluck may be easily removed. To facilitate cooling, the carcass should be split or sawed down the backbone. In splitting or sawing the carcass be careful to cut near the mid line.

THE LEAF FAT

While the carcass is still warm remove the leaf or kidney fat in order to facilitate its cooling. To remove the leaf fat, peel it upward with the fingers, beginning at the bottom. The kidneys, which are in this fat, shoul be removed. The leaf fat should be spread out on a table to cool, with the thin membrane side turned down. The gut fat should not be mixed with the leaf fat in rendering.

FIG. 4.—Removing the intestines

COOLING THE CARCASS

The carcass should be cooled rapidly after slaughtering, but not allowed to freeze. Select a day when there is a chance for cooling the carcass before the surface freezes. The desirable temperature for cooling meat is from 34° to 40° F. In summer it is necessary to have refrigeration. In the fall it is best to kill in the afternoon, allowing the carcass to cool overnight. Hang the carcass in a dark cellar or cool outbuilding where flies can not get to it. Fresh meat absorbs odors very readily; for that reason do not hang the carcass in a freshly painted room or in a room with tar, kerosene, or gasoline.

CUTTING UP A HOG

A carcass should not be cut up until it has thoroughly cooled. The usual farm method of cutting up a hog is to remove the head, sever the ribs on each side of the backbone, take out the backbone, and divide the carcass into two equal parts. The ribs are taken out

before the sides are "blocked." Another method is to split the carcass with a saw or cleaver as near the mid line as possible. Cut each

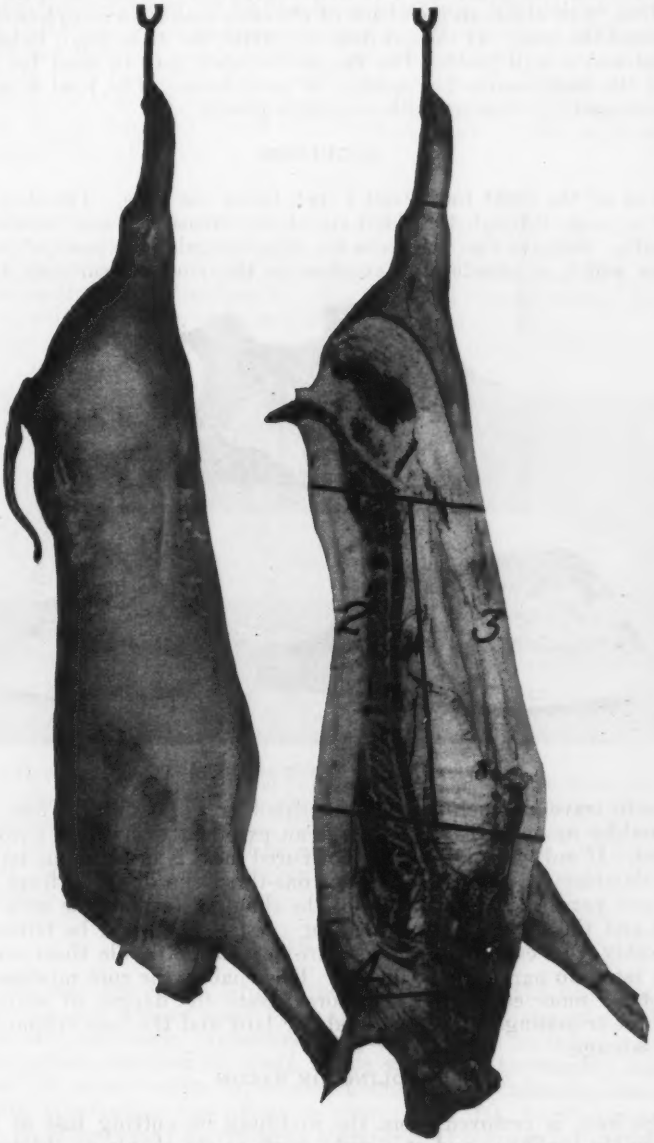

FIG. 5.—Cuts of pork: 1. Ham. 2. Loin. 3. Bacon. 4. Shoulder. 5. Head.

half into four parts, head, shoulder, middle, and hams, as shown in Figure 5, right side.

HEAD

The head is generally removed before the carcass is split into halves. Cut about an inch back of the ears, making a complete circle around the neck. If the cut does not strike the atlas joint, twist the head and it will yield. The fat of the head may be used for lard and the fleshy parts for sausage or headcheese. The jowl is sometimes used for cooking with vegetable greens.

SHOULDER

Cut off the front foot about 1 inch below the knee. The shoulder cut is made through the third rib at the breastbone and across the fourth. Remove the ribs from the shoulder, also the piece of backbone which is attached. Cut close to the ribs in removing them

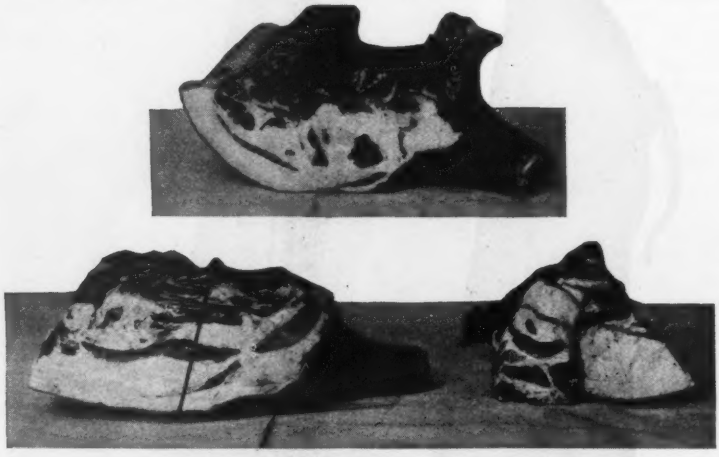

FIG. 6.—The shoulder cuts and trimmings

so as to leave as much meat on the shoulder as possible. These are "shoulder or neck ribs" and make an excellent dish when fried or baked. If only a small quantity of cured meat is desired, the top of the shoulder may be cut off about one-third the distance from the top and parallel to it. The fat of the shoulder top may be used for lard and the lean meat for steak or roasts. It should be trimmed smoothly. In case the shoulders are very large divide them crosswise into two parts. (See fig. 6.) This enables the cure mixture to penetrate more easily and therefore lessens the danger of souring. The fat trimmings should be used for lard and the lean trimmings for sausage.

MIDDLING OR BACON

The ham is removed from the middling by cutting just at the rise in the backbone and at a right angle to the shank, as shown in Figure 5.

The loin and fatback are cut off in one piece, parallel with the back just below the tenderloin muscle on the rear part of the middling. Remove the fat on the top of the loin, but do not cut into the loin meat. The lean meat is excellent for canning, or it may be used for chops or roasts and the fatback for lard. The remainder should then be trimmed for middling or bacon. Remove the ribs, cutting as close to them as possible. If it is a very large side, it may be cut into two pieces. Trim all sides and edges as smoothly as possible. (Fig. 9.)

HAM

Cut off the foot about 1 inch below the hock joint. All rough and hanging pieces of meat should be trimmed from the ham. It should then be trimmed smoothly, exposing as little lean meat as possible, because the curing hardens it. (Fig. 8.) All lean trimmings should be saved for sausage and fat trimmings for lard.

The other half of the carcass should be cut up in similar manner.

FIG. 7.—Untrimmed loin, trimmed loin, and loin trimmings

MEAT TRIMMINGS AND FAT TRIMMINGS

After the carcass has been cut up and the pieces are trimmed and shaped properly for the curing process there are many pieces of lean meat, fat meat, and fat which can be used for making sausage and lard. The fat should be separated from the lean and used for lard. The meat should be cut into convenient-sized pieces to pass through the grinder.

RENDERING LARD

The leaf fat makes lard of the best quality. The back strip of the side also makes good lard, as do the trimmings of the ham, shoulder, and neck. Intestinal or gut fat makes an inferior grade, and is best rendered by itself. This should be thoroughly washed and left in cold water for several hours before rendering, thus partially eliminating the offensive odor. Leaf fat, back strips, and fat trimmings may be rendered together. If the gut fat is included the lard may take on a very offensive odor.

First remove all skin and lean meat from the fat trimmings. To do this cut the fat into strips about 1½ inches wide, then place

the strip on the table, skin down, and cut the fat from the skin. When a piece of skin large enough to grasp is freed from the fat, take it in the left hand, and with the knife held in the right hand inserted between the fat and skin, pull the skin. If the knife is slanted downward slightly this will easily remove the fat from the skin. The strips of fat should then be cut into pieces 1 or 1½ inches square, making them about equal in size so that they will try out evenly. (Fig. 10.)

FIG. 8.—Ham and ham trimmings

Pour into the kettle about a quart of water, then fill it nearly full with fat cuttings. The fat will then heat and bring out the grease without burning. Render the lard over a moderate fire. At the beginning the temperature should be about 160° F., and it should be increased to 240° F. When the cracklings begin to brown, reduce the temperature to 200° F. or a little more, but not to exceed 212° F., in order to prevent scorching. Frequent stirring is necessary to prevent burning. (Fig. 11.) When the cracklings are thoroughly browned, and light enough to float, the kettle should be removed from the fire. Press the lard from the cracklings. When the lard

is removed from the fire allow it to cool a little. Strain it through a muslin cloth into the containers. To aid cooling stir it, which also tends to whiten it and make it smooth.

Lard which is to be kept for a considerable time should be placed in air-tight containers and stored in the cellar or other convenient place away from the light, in order to avoid rancidity. Fruit jars make excellent containers for lard, because they can be completely sealed. Glazed earthenware containers, such as crocks and jars, may

FIG. 9.—A side of bacon and bacon trimmings

also be used. All containers should be sterilized before filling, and if covers are placed on the crocks or jars, they also should be sterilized before use. Lard stored in air-tight containers away from the light has been found to keep in perfect condition for a number of years.

When removing lard from a container for use, take it off evenly from the surface exposed. Do not dig down into the lard and take out a scoopful, as that leaves a thin coating around the sides of the container, which will become rancid very quickly through the action of the air.

FIG. 10.—Pieces of fat cut for rendering

CURING PORK

The first essential in curing pork is to make sure that the carcass is thoroughly cooled, but meat should never be allowed to freeze either before or during the period of curing.

The proper time to begin curing is when the meat is cool and still fresh, or about 24 to 36 hours after killing.

VESSELS FOR CURING

A clean, hardwood molasses or sirup barrel is a suitable vessel in which to cure pork. The barrel should be clean and tight so as to

prevent leakage. A large stone jar is the best container in which to cure meat, though the initial cost is high; such a container is very easily kept clean. If a barrel is used repeatedly for curing pork, it is necessary to scald it out thoroughly before fresh pork is packed in it.

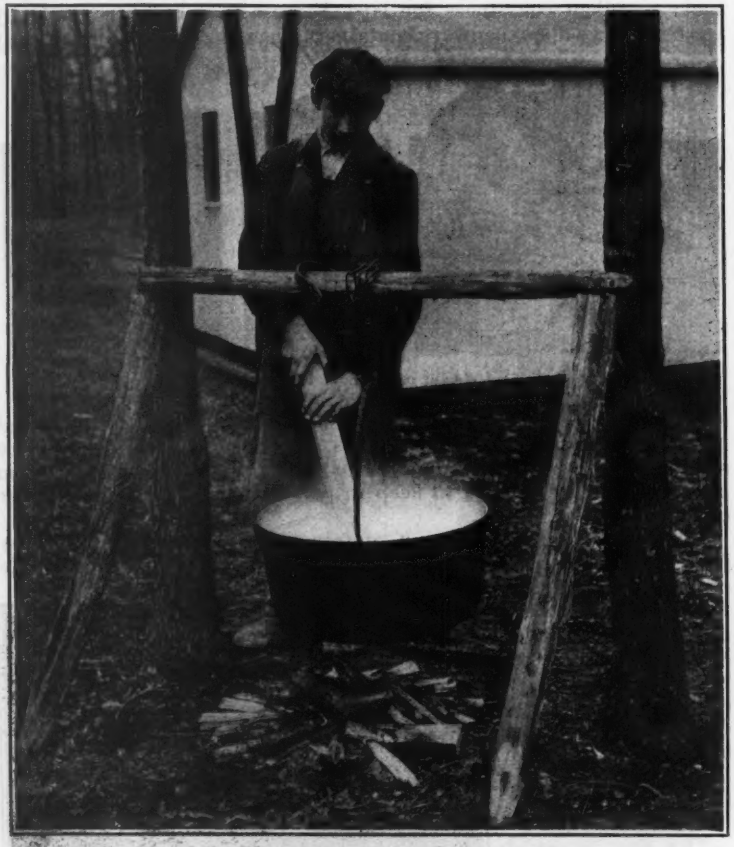

FIG. 11.—A suitable kettle for rendering lard

CURING AGENTS

Salt, saltpeter, sugar, and molasses are the principal preservatives used in curing pork. The use of borax, boric acid, formalin, salicylic acid, and other chemicals is prohibited in connection with meats and products to which the Federal meat-inspection law is applicable.

Salt when applied alone to meat makes it very hard and dry, because its action draws out the meat juices and hardens the muscle fibers. Salt which is at least 99 per cent pure is desirable. A good grade of dairy salt, or salt intended for table use, is reasonably free

from impurities and gives the desired penetration in less time than impure salt. Good results can not be expected if coarse or impure salt is used. Saltpeter is used to hasten the curing of the meat. It is more astringent than salt and should be used sparingly. Sugar and molasses soften the muscle fibers and improve the flavor of the meat; hence a combination of salt and sugar makes a good cure.

PLACE FOR CURING

A cool, well-ventilated cellar, free from rats, is the most desirable place for both brine and dry curing. The smokehouse may also be used for this purpose, but it should be observed that when curing by the dry-salt method special attention should be given to the ventilation to prevent excessive dryness.

Cold-storage and ice plants generally have rooms equipped with partitioned shelves, where farmers may store their meat during the process of curing at an even temperature, which will insure excellent results. This should be beneficial in southern climates, where the weather is warm or subject to sudden change. In localities where such refrigeration facilities have not been established cooperative cold-storage plants conducted by a number of farmers in a community may be found to be a good investment, as plants of that kind may be used also for the purpose of manufacturing ice during the summer and the power may be utilized further in generating electricity for lighting.

DRY CURE COMPARED WITH SWEET-PICKLE OR BRINE CURE

There are two methods of curing pork—the dry cure and the sweet-pickle or brine cure. The dry cure is preferred, as it is simpler and requires less handling of the meat, as will be observed from the formulas outlined in the following paragraphs. The sweet-pickle or brine cure is not advocated in the southern sections of the country, in view of the uncertain temperatures, the cure being uncertain when the temperature ranges above 50° F., often causing spoilage. Dry-cured meat improves with age and is better several months after it is smoked. Irrespective of the curing method used, it is advisable before curing to rub the surface of the meat with fine salt and allow it to drain, flesh side down, for from 6 to 12 hours.

DRY-CURED PORK

Formula No. 1.—For each 100 pounds of meat use—

8 pounds salt.
2½ pounds molasses or sirup made from sugar and applied hot.
2 ounces saltpeter.
3 ounces black pepper.
2 ounces red pepper.

Mix the ingredients well. Rub the mixture over the meat thoroughly and pack it away in a barrel, box, or on a table. About the third day break the bulk and repack to insure thorough contact with the cure mixture, then allow the meat to remain until the cure is completed. This will take two days in cure for each pound that the individual pieces of meat weigh; for example, a 10-pound ham will take 20 days. After the meat has cured hang it in the smokehouse

without washing. (See p. 20 for directions for smoking.) When the meat is packed in tight barrels the liquid formed will aid in curing the heavier pieces of meat, which should be at the bottom.

Some persons attempt to use the foregoing formula without the saltpeter, but the result will not be satisfactory. The saltpeter should by no means be omitted. Be sure to cook dry-cured pork well before it is eaten.

SWEET-PICKLE OR BRINE-CURED PORK

Formula No. 2.—For each 100 pounds of meat use—

9 pounds salt.
2½ pounds sugar or 4 pounds molasses or sirup made from sugar.
2 ounces saltpeter.
4½ gallons water.

If the weather is warm 10 pounds of salt is preferable.

Allow four days for curing each pound of ham or shoulder and three days for each pound of bacon and smaller pieces. For example, a 15-pound ham will take 60 days; a piece of bacon weighing 10 pounds, 30 days.

All the ingredients are placed in the water and thoroughly stirred. The brine mixture should be prepared the day before it is to be used, so that it will be completely dissolved. Place the hams on the bottom of the container, shoulders next, bacon sides and small cuts on top, Cover with boards weighted with stones or bricks, as iron rusts and stains the meat. Pour the pickle in and be sure that it covers the meat thoroughly. In seven days take out all the meat, remove the pickle, replace the meat in the container, weight it down, then cover again with the pickle. Repeat this process every seven days until cure is completed.

If the pickle becomes ropy, take out all the meat and wash it and the container thoroughly. Boil the ropy pickle, or, better, make new pickle. When each piece of meat has received the proper cure, remove it from the pickle and wash in lukewarm water. String it and hang it in the smokehouse. (See p. 20 for directions for smoking.) The temperature of the smokehouse should not exceed 120° F. Smoke the meat until it has a good chestnut color. Cook sweet-pickle or brine-cured pork thoroughly before it is eaten.

CURING SMITHFIELD HAMS

The following method for producing Smithfield hams has been furnished:

The hams are placed in a large tray of fine salt, then the flesh surface is sprinkled with finely ground saltpeter until they are as white as though covered by a moderate frost, or, say, use 4 to 6 ounces of the powdered saltpeter to each 100 pounds of green hams.

After applying the saltpeter, salt immediately with the fine salt, covering the entire surface well. Then pack the hams in bulk, skin-side down, put in piles not more than 3 feet high. In ordinary weather the hams should remain thus for three days. Then break bulk and resalt with fine salt. The hams thus salted and resalted should now remain in bulk one day for each pound; that is, a 10-pound ham should remain 10 days and in like proportion of time for larger and smaller sizes. When the cure is complete wash

with tepid water until the hams are clean, and after partially drying rub the entire surface with finely ground black pepper. They should then be hung in the smokehouse and the important operation of smoking begun. The smoking should be done very gradually and slowly, extending through 30 or 40 days.

After the hams are cured and smoked they should be repeppered to guard against vermin and then be bagged. Such hams improve with age and are in perfect condition when 1 year old. As in the case of other uncooked pork products, be sure to cook Smithfield hams thoroughly before serving.

PICKLED PORK

Fatbacks cut into suitable pieces for curing are generally treated in the following manner: The pieces of meat are packed in a container and a pickle made of the following ingredients is poured over the meat: To 4 gallons of water add 10 pounds of salt and 2 ounces of saltpeter for each 100 pounds of meat. Cook pickled pork thoroughly before it is eaten, thus avoiding trichinosis, a disease likely to result from eating uncooked pork.

PICKLED PIGS' FEET

The feet may be used for pickled pigs' feet or pig's-foot jelly.

In preparing pickled pigs' feet, place them in salt pickle for several days. Then boil them for a varying length of time, depending upon the size of the feet, taking care to remove them from the kettle before the separation of the meat from the bones. Split the feet lengthwise, place them in a jar or other receptacle, and cover with vinegar to which bay leaves, allspice, and whole black pepper have been added.

Pig's-foot jelly is prepared by curing the feet for several days in salt pickle, after which they should be boiled until the meat separates from the bone. Add vinegar, allspice, and pepper, and pack into molds.

MAKING SAUSAGE

Trimmings and pieces of meat which otherwise might be wasted may be converted into some form of sausage. Sausage making is a trade well worth learning. Often on the farm when animals are butchered for home consumption portions of the carcass are not utilized to the best advantage. A demand for fresh and smoked country sausage always exists, and it is just as important for every farmer to know how to make good sausage as it is to know how to make good hams and bacon.

The only equipment necessary to make sausage is a meat cutter with a stuffer attachment. A knife, cord string, and casings or muslin bags also will be needed. Muslin bags can be made of any size, but the most convenient are 12 inches long by 2 inches in diameter. When sausage is stuffed in muslin bags they should be paraffined after stuffing. Sausage stuffed in muslin bags and paraffined keeps longer and better than in casings. When set in a cool place sausage will keep very well in stone crocks or tin pans if a layer of hot lard or paraffin is poured over the top.

XUM

PURE PORK SAUSAGE

Good pork sausage may be made as follows:

65 pounds fresh lean meat.	2 ounces fine sage.
35 pounds fat.	1 ounce ground nutmeg.
1¾ pounds salt.	4 ounces black pepper.

Cut the meat into small pieces, mix and add the spices, and then put through the grinder, using the small plate. After it is well ground, mix thoroughly to be sure that it is uniformly seasoned. No water should be added if the sausage is to be stored away in bulk. If it is to be stuffed in casings a little water may be necessary to soften the meat so that it will slip easily into the casings. Cook thoroughly before eating.

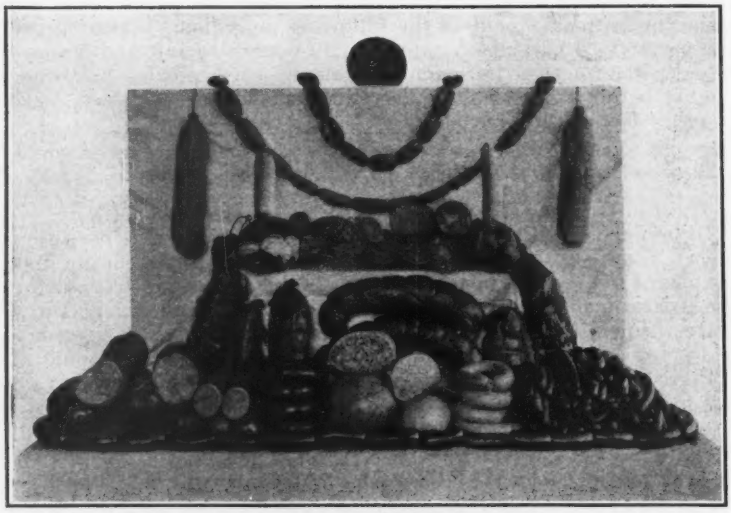

FIG. 12.—A display of various kinds of sausage

SMOKED OR COUNTRY SAUSAGE

The following ingredients are used in making smoked or country sausage:

85 pounds lean pork.	1 ounce red pepper.
15 pounds beef.	1 ounce sweet marjoram.
1½ or 2 pounds salt.	1 ounce mace.
4 ounces black pepper.	

Cut the meat into small pieces and sprinkle seasoning over it, then run it through the grinder, using the small plate. Put it away in a cool place for from 24 to 36 hours, then add a little water and stuff into hog casings and smoke in a very cool smoke until a dark-mahogany color is obtained. Cook sausage well before eating.

BOLOGNA-STYLE SAUSAGE

Bologna-style sausage is used extensively for lunches on picnics or outings. Its keeping qualities are excellent. The following ingredients are used in making it:

60 pounds cured beef.
40 pounds pork.
20 pounds water.
1½ or 2 pounds salt.
2 ounces mace.
1 ounce coriander.
4 ounces black pepper.

Grind the beef and let it cure for 24 hours in a cool place, then grind it very fine.[2] Put the pork through the grinder, using the medium plate. Then put the beef and pork together into a container and add the spices and water. Mix thoroughly until it takes on a dull color and becomes sticky. Stuff into large beef casings or into beef rounds. This sausage can also be stuffed into muslin bags and paraffined. It will keep perfectly prepared in this way. Allow it to hang about 20 minutes in a cool place. Smoke for about 2 hours, or until a good color is obtained, at a temperature not to exceed 140° F. After the bologna is smoked it should be cooked, the rounds about 30 minutes, and the larger bolognas about 1½ hours, at a temperature of 160° F. To tell when bologna is cooked enough, squeeze it in the hand, and if done it will squeak when the pressure is released. Place in cold water for about 30 minutes and then hang it up in a cool place to keep.

BLOOD SAUSAGE

Blood sausage is made of the following ingredients:

25 pounds cured back fat or shoulder fat.
7 pounds cured fat skins.
6 pounds blood.
½ pound onions.
1 pound salt.
½ ounce white pepper.
1 ounce sweet marjoram.
¼ ounce cloves.

Cook the fat, which has been dry-cured or sweet-pickled, for about 1 hour and the skins 2 hours at a temperature of 200° F. When cooked put through grinder, using small or medium plate. Put into a container, add blood and seasoning, and mix thoroughly. Stuff into large beef casings and boil, in the same water that the meat was cooked in, until the sausage floats. Dip the sausage into cold water and hang away to cool.

HEADCHEESE

The head is frequently used for making headcheese. The head should be shaved clean, the snout skinned and nostrils cut off just in front of the eyes. Cut out the eyes and eardrums. The fattest part should be used for lard. When the head is cleaned, soak it in water for some time to extract the blood and dirt. After the head is thoroughly cleaned cover it with water and boil until the meat separates from the bones. Tongues may be cooked with the head. When thoroughly cooked take out the meat, saving the liquor for future

[2] Beef should be ground, salt and seasoning added, and the bulk stored away for from 24 to 48 hours before using it for sausage. Fresh meat stuffed into casings and smoked invariably spoils.

use. Chop the meat up fine. Season with the following for every 50 pounds of meat:

2 gallons of the liquor.	1 ounce red pepper.
1½ pounds salt.	4 ounces ground cloves.
3 ounces black pepper.	

All should be mixed thoroughly so that proper seasoning is obtained. If casings are available, stuff the mixture into large beef casings. A hog stomach, after it is thoroughly cleaned, may be used. If the meat is stuffed into casings it should be boiled again in the same liquor in which the meat was boiled. The meat in the casings should be boiled until it floats, then placed in cold water for a short time. Store it away in a clean, cool place on a shelf or table. Place a board over the meat in the casings with a weight on top in order to hold the shape and to prevent the moisture from collecting in one spot. If there are no casings available in which to stuff the meat it should be kept in shallow pans.

LIVER PUDDING

All the odds and ends of trimmings not used for sausage, resulting from cutting up the hog carcass, may be used in making liver pudding. The head, if used, should be cleaned as previously described under "Headcheese." The jowl should be cut off and salted down. The head, liver cut into slices and some beef or veal, if any is at hand, should be put into a kettle and boiled. The skin which has been cut from the fat also can be boiled with this meat. The skin will cook more quickly than the meat, so that it should be put into a cloth sack and removed when thoroughly cooked. Livers also cook in a very short time and should be removed. The meat should cook until it falls from the bones. All the meat except the skin and liver should be ground, using the smaller grinder plate. To 40 pounds of meat add about 1 gallon soup (the broth the meat was cooked in) and the following seasoning:

1 pound salt.	1 ounce black pepper.
3 ounces sweet marjoram.	Garlic or onion, if desired.
1 ounce allspice.	

The seasoning should be worked into the meat. This finished product can be put into jars covered with paraffin or stuffed into beef rounds. When stuffed into casings it should be cooked until it floats in the same water in which the meat was cooked. Then place in cold water until it is thoroughly cooled.

SUMMER SAUSAGE AND VIENNA SAUSAGE

Owing to the fact that a serious and frequently fatal disease known as trichinosis may result from eating uncooked or improperly cooked pork, products containing uncooked pork and customarily eaten without cooking, such as summer sausage and Vienna sausage or Frankfurts, should not be prepared on the farm.

SMOKING CURED MEAT

The process of smoking helps to preserve the meat. Smoking also gives a desirable flavor to the meat if it is smoked properly and with the right kind of fuel.

THE SMOKEHOUSE

The smokehouse can be made of any size and of the kind of material suitable to the demands of the owner. If a very small quantity of meat is to be smoked once a year, a barrel or a box (fig. 13) will answer. On the other hand, if a considerable quantity of meat is smoked and the house is to be permanent, it should be built of brick, concrete, or stone to be fireproof. (Fig. 14.) A small building can be used if care is taken to confine the fire in an iron kettle to the center of the room. The safest method is to construct a fire pit outside the house and pipe the smoke into the house. The pipe running from the pit to the house should be buried to prevent crushing.

A smokehouse, 6 by 8 feet, 14 feet high, will give best results for general farm use. Ventilation should be provided to carry off the

FIG. 13.—A type of smokehouse that can be constructed quickly and cheaply

warm air and prevent overheating the meat. Small openings under the eaves or a chimney in the roof will control ventilation. If arrangements can not be made to have a fire pit outside the house, it should be built on the floor and a metal sheet constructed to shield the meat. If the meat is hung 6 or 7 feet above the fire, the shield will not be necessary, as at that height the meat will get the benefit of the thick smoke and still hang beyond the reach of the flame.

THE FUEL

Green hickory or maple wood is the best fuel for smoking. Hard wood is preferable to soft wood. Resinous woods should never be

used, as they give an objectionable flavor to the meat. Corncobs may be used, but they deposit carbon on the meat, giving it a dirty appearance.

SMOKING

Meats which have been cured by the dry-cure methods for the proper length of time are ready for smoking. Meats which have been cured by the sweet-pickle or brine method should be removed from the pickle and soaked for half an hour in clean water. If

FIG. 14.—A farm smokehouse, fireproof and fairly tight

meat has overcured by remaining in pickle longer than the allotted time, soak for half an hour as recommended and three minutes extra for each day overtime for which it has remained in the pickle. Such meat has become pickle-soaked and its quality impaired. After soaking, rinse, fasten the strings securely, and hang in the smokehouse.

Hang the pieces so that they do not touch. This allows proper coloration of the meat to occur and gives good opportunity for circulation of the smoke. Keep the fire going continuously if smoking is to be completed in one operation, holding the temperature as even as

possible and not allowing it to go beyond 120° F. From 36 to 48 hours may produce a satisfactory color, but if it is intended to keep the meat until well aged, longer and slower smoking is desirable.

During warm weather it is better to start a fire every other day rather than heat the meat too much. In the winter, however, if the fire is not kept going, the meat may cool and the smoke will not penetrate properly. As soon as the meat is thoroughly smoked, open the doors and ventilator in order to cool the meat. When the meat is smoked it may hang in the smokehouse, but it is better that it should be wrapped and sacked.

The use of "liquid smoke" has become more or less generally practiced in various sections of the country. The Federal meat-

FIG. 15.—Meat hanging in a smokehouse

inspection regulations prohibit its use in packing houses where inspection is maintained. Meat prepared by farmers on the farms is prohibited by the above-mentioned regulations from interstate shipment if it has been subjected to liquid-smoke treatment.

STORING SMOKED MEATS

After it is hard and firm, smoked meat may be wrapped in heavy paper and put into muslin sacks. It is very important that the top of the sack be tied properly to keep insects out. Before the hams or strips of bacon are placed in the sacks, remove the strings from the hams. There is a great tendency to use the same strings to hang up the meat after it is sacked as were used to hang it while smoking.

XUM

It is impossible to tie the top of the sack and make it insect proof if a string from the meat passes through the paper and sticks out at the top. In tying the top of the sack make a double wrap before tying a knot, which will prevent the entrance of any insects. Each sack may then be painted with yellow wash, used to protect them, and hung up for future use. Never stack hams and bacon in a pile after yellow wash has been applied.

RECIPE FOR YELLOW WASH

For 100 pounds hams or bacon use—

3 pounds barium sulphate.	1¼ ounces chrome yellow.
1 ounce glue (dry).	6 ounces flour.

Half fill a pail with water and mix in the flour, breaking up all lumps thoroughly. Mix the chrome yellow in a quart of water in a separate vessel, add the glue, and pour both into the flour-and-water mixture. Bring the whole to a boil and add the barium sulphate slowly, stirring constantly. Make the wash the day before it is required. Stir it frequently while using, and apply with a brush.

DIRECTIONS FOR COOKING AN OLD HAM

Soak several hours, thoroughly remove all mold and loose pieces, and rinse well.

Cover with cold water, add two tablespoonfuls of vinegar, one-half cup brown sugar, four cloves and one bay leaf, and heat to boiling. (The amount of cloves and bay leaf may be increased if desired, especially for larger hams.)

Reduce the heat to a constant simmer and allow to cook at this temperature at the rate of 20 minutes for each pound weight.

Remove from the fire, but keep the ham in the liquor in which it was cooked, until cold; then remove from the container and allow to drain.

Take off the skin, score the fat in inch blocks, and cover with a coating of brown sugar and crumbs. Stick with cloves 1 inch apart.

Bake in a slow oven until nicely browned, basting at intervals with one-half cup of water and one tablespoonful of vinegar. A ham should always be well cooked before it is eaten.

SHIPPER'S CERTIFICATE

Farmers who ship their cured meats must comply with official State and Federal regulations. Below appears a sample shipper's certificate such as must be used in interstate shipments of uninspected meat or meat food products which are from animals slaughtered by the farmer on the farm. In providing blank certificates for the purpose this sample should be followed. In size it should be 5½ by 8 inches.

SHIPPER'S CERTIFICATE

*Date*_____, 19__.

Name of carrier_____
Shipper_____
Point of shipment_____
Consignee_____
Destination_____

I hereby certify that the following-described uninspected meat or meat food products are from animals slaughtered by a farmer on the farm, and are offered for transportation in interstate or foreign commerce as exempted from inspection according to the act of Congress of June 30, 1906, and at this date they are sound, healthful, wholesome, and fit for human food, and contain no preservative or coloring matter or other substance prohibited by the regulations of the Secretary of Agriculture governing meat inspection.

Amount and weight.

Kind of product_____

_____
(Signature of shipper)

_____
(Address of shipper)

Two copies of this form to be presented to the common carrier with each shipment.

ECONOMIC SUGGESTIONS ON KILLING AND CURING

Cleanliness is the most important factor in butchering and in curing meats. Meat very easily becomes tainted.

Save all pieces of meat for sausage. There are many ways of converting it into a palatable product.

All waste fat, trimmings, and skin should be rendered and the product used to make soap. Offal and any other refuse from slaughtering operations should be either burned to ashes so they can not be eaten by hogs or rats, or else safeguarded by boiling or rendering. The parasites which spread the painful disease, trichinosis, are spread solely by muscle tissue from infested animals eaten raw or imperfectly cooked.

Bones should be crushed or ground for chicken feed.

Never put meat in to cure before the animal heat is out of it.

Always pack meat skin side down when in the curing process, except the top layer in a brine cure, which should be turned flesh-side down.

Keep close watch of the brine, and if it becomes "ropy," change it.

Do not forget to turn or change meat several times during the curing process.

The fat of dry-cured meat sometimes becomes yellow, but that does not make it unwholesome.

It takes more time to smoke dry-cured than brine-cured pork.

Slow smoking is much better than rapid smoking, and there is less chance of causing the meat to drip.

If meat becomes moldy, brush off the mold with a stiff brush or trim the moldy parts off with a knife.

Be sure that meat is thoroughly cooled before sacking.

The seasoning of sausage is generally governed by taste.

Fresh sausage can be kept under a covering of lard for a number of days.

XUM

HOME CANNING OF PORK AND PORK PRODUCTS

FRANTS P. LUND, *States Relations Service*

While the curing of meat with salt followed by smoking is in universal use and has been known as far back as records go, the canning of meats is relatively new. It has, however, become one of the most important methods of food preservation. On the farm, where often fresh meat can not be bought readily or can be kept fresh for only a short time because of lack of ice or of refrigeration facilities, the value to the housekeeper of such a method of providing a readily available supply of palatable and wholesome food can not be overestimated.

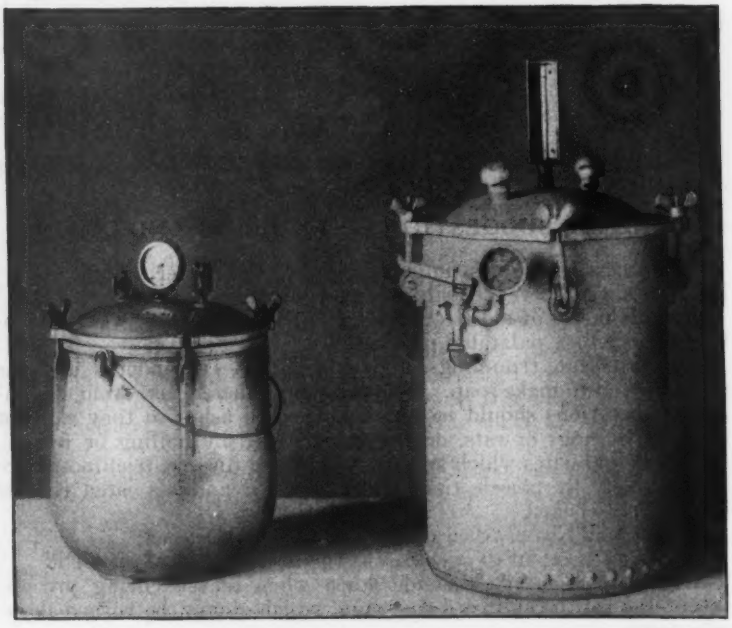

FIG. 16.—Two types of pressure canners or cookers in common use

THE STEAM-PRESSURE CANNER SHOULD BE USED

The successful canning of meat has been greatly promoted by the introduction of small steam-pressure canners suitable for home use, which make the process much safer. With such canners it is easy to secure the high temperature required properly to sterilize meats and prevent spoilage, namely, 250° F., equivalent to steam pressure of 15 pounds per square inch. All kinds of animal and vegetable foods can be preserved successfully in an attractive, palatable, and economical way by the use of the pressure canner, which has also

been found to be an economical convenience in connection with the regular household cooking.

HOW TO USE THE STEAM-PRESSURE CANNER

Pressure canners should be of standard quality, constructed to maintain uniformly at least 15 or 20 pounds of pressure and be tested for considerably higher pressures to insure safety to the operator. The home steam-pressure canner consists of a kettlelike receptacle with a lid that can be securely fastened, making a steam-tight joint. It is fitted with a gauge recording the steam pressure per square inch, generally expressed in pounds. A thermometer giving the inside temperature is sometimes attached. There must be a safety valve for the escape of steam as soon as the pressure reaches a certain number of pounds per square inch. In some canners this safety valve is adjustable as to the pressure reached before it "blows off." There must also be a pet cock through which air and steam can be let out, thus reducing the pressure to zero before opening the canner; otherwise the person attempting to unfasten the cover may be seriously scalded.

When the women do the canning, and if it is desired also to use the pressure canner in the preparation of daily meals, an aluminum pressure canner may be preferred on account of not being so heavy to lift as those made of boiler steel.

FIG. 17.—Hams in pan ready for roasting. Results are more satisfactory when meat is cooked before canning. Cooked meats improve in the processing, while raw meats become less attractive after processing and standing in storage

PREPARATION OF PORK FOR CANNING

Handle all meats in a cleanly manner. As soon as the animal heat has disappeared the meat may be prepared for canning. It should always be cooked first—roasted, fried, broiled, baked, or stewed—just as though for immediate serving, so that the flavor can be largely retained (fig. 17). If raw meat is packed, the time for sterilization will have to be prolonged considerably and the can will contain boiled or steam-cooked meat. On the other hand, if the meat is roasted, fried, or otherwise prepared and hot gravy stock is added, the time required for sterilization will not be so long, and when the can is opened it will contain the roasted, fried, or otherwise prepared meat with the flavor of the freshly cooked product.

Season the meat according to individual taste and cook it thoroughly; it need not be cooked tender. Whatever method is chosen, the meat should be cooked until it is no longer red in the center.

From the hog carcass the head may be cleaned and used for headcheese and canned; the brains may be soaked in salted water to remove any blood, then fried or otherwise prepared, and canned. The tongue may be lightly salted, boiled, and canned with a little meat jelly added. The cleaned snout may be boiled, pickled, and canned. The feet, after scalding and thorough cleaning, may be boiled, pickled and canned. The liver may be soaked in salted water and cleaned carefully; then, after the large veins have been removed, it should be sliced or diced and fried, used for liver sausage, or for liver paste, and canned. The kidneys, having been split open and the little sac in the center removed, should be soaked in several changes of salted water, sliced, and fried, or cut into cubes, stewed, and then canned. The large intestines may be cleaned, scalded, scraped, soaked in several changes of salted water, made into chitterlings, fried or boiled, and canned. The heart should be cleaned from blood clots, the coarser veins removed, sliced, and made into goulash or spiced heart, or it may be sliced or diced, fried, and then canned. After the lard is rendered the remaining cracklings may be canned, if desired, for crackling bread. The clean skin, cut from the fat used for lard, should be soaked in several changes of cold water, then with just water enough added to cover the skin, cooked for one hour at 10 pounds' pressure. The liquid should then be strained through a double layer of cheesecloth and allowed to cool. When cold the grease can be easily removed from the top and the resulting stock will be thick enough to jelly. It can be reheated and canned like soup and later be used as gelatin for puddings, etc., or it can be used as addition to soups and gravies. The thoroughly boiled skin can be chopped up and mixed with other meat scraps for use in making scrapple or similar dishes.

The bones cut from the fresh meat or from the roasted meat may be utilized for soup stock, although they will not give so much or so rich a soup as that made from beef. The soup stock may be canned. The hams, shoulders, tenderloin, backbone, and spareribs may be roasted, sliced, and packed in cans. (The bones should be removed before canning.) Add hot gravy stock to fill all spaces between the meat pieces. Seal and process. Sausage, made from pork, may be put into casings or made into little cakes, fried and canned. The side meat and fatback may be cured or salted and kept in this way. If there is danger that the cured bacon or side meat will not keep well through the summer, as sometimes happens in the warmer parts of the country, it may be sliced about one-fourth inch thick, dipped in beaten eggs, and fried to a nice brown color, then packed in cans and processed like other cooked meat.

In some places the blood of the butchered hog is used as food. The blood is first beaten with an egg beater or mayonnaise beater as soon as taken from the butchered animal. It is then strained and mixed with barley or hominy grit, a little finely diced fat pork, some milk, raisins cleaned and scalded, sugar, and spices. It is then put into well-cleaned casings until half full, after which the casings are tied or sewed at the ends and slowly boiled in plenty of water for 1½ hours. The blood may also be made into blood pudding. Either the blood sausage or pudding may be canned.

Thus every part of the hog suitable for human food may be saved and canned; the by-products, which too often are wasted in ordinary farm butchering, may more than pay for the extra labor and the containers needed for canning all the animal.

CONTAINERS

Some people prefer to use glass jars for containers, although tin cans are used in many homes, especially in the Southern States. If glass jars requiring rubber rings are used the highest quality of rings should be procured. With hermetic-seal jars, be sure that the sealing composition on the cap is unbroken. For some jars it is necessary to use a special machine to put the cover on and seal the jar.

CANNING IN TIN CANS

There are two types of tin cans in general use, the "cap-and-hole" can and the "sanitary" can. Either of these may be had as plain tin cans or inside-lacquered tin cans. If an acid, like vinegar, has been used in the preparation of the meat to be canned, the inside-lacquered can should be used.

For sealing the cap-and-hole can it is necessary to use a capping steel and a tipping copper. The capping steel must correspond in size to the hole in the can and should fit the cap to be used. A suitable apparatus for heating these irons is needed, and some solder and flux must also be provided.

For the sanitary cans it is necessary to have a mechanical sealer (for home use a hand sealer may be used) by which the whole top is put on in one operation.

To make flux.—Put some commercial muriatic acid into a glass or crockery vessel (a metal container will not do), add strips of sheet zinc (old zinc jar tops from which the glass lining has been removed will do) until no more can be dissolved. Add to this an equal quantity of water and strain through a piece of muslin. This is called flux and should be used with care. When canning, have some flux in a saucer or other container in which to clean the soldering tools. Keep separately in a glass bottle, properly labeled, the quantity which will be needed for sealing the cans.

Capping steel and copper.—Capping steel and copper should be kept coated with solder in order to make the solder flow evenly when sealing. It may be necessary to clean them with coarse sandpaper or even with a file, but care must be taken to see that the edges are kept true. For coating the steel and copper with solder prepare a handful of powdered sal ammoniac mixed with a few pieces of solder and put into a can. Heat the already smoothed capping steel or tipping copper until almost red hot, dip into the flux and then into the sal ammoniac and solder, turning it about and rubbing until bright and well coated with solder, then dip in the flux again.

Filling the cans.—Tin cans must be washed clean in warm water, rinsed, and then with the caps immersed from 10 to 15 minutes in boiling water to remove all dirt or chemicals that may be clinging to the tin. Remove from the water and drain. Never use rusty cans. If sanitary cans are used, the tops must not be put into water, but should be wiped with a damp cloth just before putting them on the cans and sealing them.

XUM

Cut the meat into sizes according to can openings and pack in the cans (fig. 18), filling them within one-half an inch of the top, then pour in boiling hot gravy to fill all spaces between the slices of meat. (Fig. 19.) Do not fill can entirely full, but leave from one-fourth to one-half inch of space at the top of the can. If there is not gravy enough, boiling water or soup stock may be added. Wipe the can top absolutely clean, and especially the grooves around the opening, which must be entirely free from grease. It is best to use a small piece of cloth dipped in boiling water for removing the grease. Wipe dry with a clean cloth.

Sealing the caps in place.—Wipe the caps and place them on the cans. Apply flux carefully around the edge of cap in the groove with a small brush or a little mop made by tying a small piece of cloth around a small stick. The flux is used to make the solder adhere to the tin. Apply the clean, hot, capping steel, holding the

FIG. 18.—Packing meat in cans

cap in place with the center rod. As the steel is lowered turn steadily until the solder flows, hold the rod firmly and lift the steel with a sudden twist to swing the melted solder around the groove evenly. Keep the center rod on the cap until the solder sets, which will take only a few seconds.

Exhausting.—Exhausting is driving out the surplus air before completely sealing the can. This is done to prevent possible swelling of the can from the expansion of the air, which might cause it to be taken for a "swell" indicating spoilage due to bacterial action. Furthermore, the presence of air may cause the canned material to act on the tin and produce salts of tin, which are objectionable from the standpoint of health. If cold meat is placed in the cans, it will always be necessary to exhaust. Place the cans in a wire tray and lower into boiling water to within 1 inch of the top for from 5 to 8 minutes, or just long enough to cause the contents of the can to be heated to 180° F. Exhausting is not necessary, however, if meat is placed hot in cans and boiling gravy added, as the steam from the

hot gravy will drive out the air, and the cans should then be sealed at once. When sanitary cans are used the exhausting is done before the top is put on.

Tipping.—Close the small hole in the cap immediately after exhausting or, if filled with hot meat and gravy, immediately after capping. Apply flux as for capping and use a little wire solder (bar solder can be used in case the wire solder is not at hand). Hold the solder with the left hand near the hole and barely touch with the hot copper after it has been dipped in the flux, so that only a bead will drop and cover the hole.

Testing for leaks.—As it is essential that the soldering shall completely seal the cans, it is necessary to test the cans before processing (sterilizing) in order to be sure there are no leaks. If the cans have been filled too full or a piece of meat touches the top, it is almost impossible to seal effectively ,and little pinholes will be formed in the

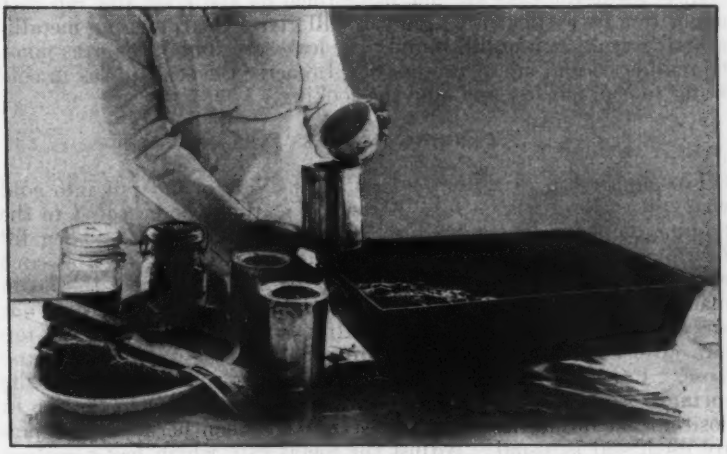

FIG. 19.—Adding gravy to meat in cans

melted solder. The center rod of the capping steel should never be so pointed that it closes the little venthole entirely when sealing a can containing hot liquid, because the steam formed is liable to escape through the melted solder and thus cause pinholes. Test by submerging the cans in boiling water. If little air bubbles come through, there are leaks and the can must be resoldered before processing.

Processing.—Processing is the sterilizing of the cans after sealing. Pour boiling water into the steam-pressure canner until it rises nearly to the level of the rack, but not over it (generally to a depth of from 1 to 1½ inches in the small home pressure canners). Place the canner over the fire so that the water will boil vigorously, put the cans to be sterilized into the crate that is furnished with the canner (or place directly on the rack in the canner), lower this into canner, put the cover on, and screw down the clamps so that the cover is steam tight. Leave the pet cock open until steam escapes, then

partly close, so that only a very small amount of steam escapes. If the safety valve is adjustable, adjust it to "blow off" at the pressure desired, generally 15 pounds at least. Raise the temperature by means of a quick fire until the gauge on the cover of the retort shows 15 pounds of steam pressure. Count time (in accordance with the recipes given later) from the moment this pressure has been reached, which is equal to a temperature of 250° F. This temperature kills the spores of all varieties of bacteria that are destructive to canned meats. A lower fire will now keep the heat up. Keep the temperature uniform at 250° F., or 15 pounds' pressure, until the time for processing is up; then before unfastening the clamps that hold the cover down open the pet cock or safety valve to let all steam escape. When the gauge shows no pressure, unfasten the clamps, take off the cover, and lift out the cans. The cans are now sterilized. Test for leaks by one of the several methods used for this purpose. For instance, while the cans are hot place them on the floor and tap each one with a little stick. A tight can will give a clear, ringing metallic sound; a leaky can a dull sound. If leaks are found, the cans must be resoldered and again processed. Immerse the sealed cans in cold water to cool quickly and stop the cooking.

CANNING IN GLASS JARS

For canning in glass the jars are washed clean and put into cold water in a vessel with a false bottom of slatted wood, heated to the boiling point, and kept boiling from 10 to 15 minutes. Then fill (within one-half inch of top) with meat and gravy in just the same way as in the case of tin cans. Adjust the rubber and put the lid in place. If screw-top jars are used, put the top in place but do not screw it down tight (leave about half a turn loose). For glass-top jars, adjust the rubber and glass top. See that the spring is not too loose. Put the wire clamp over the top, but do not press down the spring. For glass tops fastened with a screw ring, fasten the top in position but do not make perfectly tight. When hermetic-seal jars are used, seal as usual. Adjust the metal cap, which has a sealing composition on the inside of the lid (be sure that the sealing composition is even all around the lid, as a leak will appear if the composition is broken in places). Adjust the clamp to hold the lid in place and put into the canner.

Exhausting is not necessary with glass jars, except when they are sealed by a special machine before being processed, as the heating will force the excess air out around the lid. When glass jars are processed the canner should not be heated so high that steam "blows off" through the safety valve, since this will cause a difference in pressure between the steam on the outside of the jar and that inside the jar, resulting in a part of the contents being forced out or the rubber being pushed out of place. The temperature, of course, must be high enough to sterilize the contents, which, for meats, is equivalent to not less than 15 pounds of steam pressure. At the end of the period of sterilization do not let the steam escape from the canner, but turn out the fire or lift the canner from the fire and let it cool until the steam gauge shows that there is no more pressure. Then open the pet cock, unfasten the clamps, remove the cover, and lift out the jars carefully, avoiding any draft, as cold air striking them

is likely to cause breakage. Seal immediately by fastening the lid or pressing down the wire springs (the hermetic-seal jar does not need any attention), and allow to cool in a place free from draft. When cold, test for leaks. If any are found the products will have to be resterilized at the temperature and for the time given for regular sterilization. The rubber may also have to be changed before resterilization.

RECIPES FOR CANNING PORK

The following recipes are given to show how pork products can be prepared and canned in the home. The recipes are merely guides and may be changed to suit the individual taste. The time and temperature given for the processing period, however, should not be changed, as any reduction in either may result in insufficient sterilization and consequent spoilage of the product. It is also *necessary that nothing but absolutely fresh and cleanly handled meats be used.*

FIG. 20.—Cooked hams ready to be canned

In these recipes the time is given for tin cans. Pint glass jars require the same time for processing as the No. 2 tin cans, and quart jars the same time as the No. 3 tin cans.

ROAST PORK

Select a piece of pork for roasting—generally the ham, shoulder, or loin—scrape skin clean, and wipe with a damp cloth. If the ham is used and skin is left on, cut with point of knife just through skin so as to dice skin, and trim with some cloves and little tufts or parsley (if desired). Salt and pepper to taste should be sprinkled over the ham. For a ham weighing 8 to 10 pounds use 1 to 2 tablespoons of salt and from one-half to 1 teaspoon of pepper. Heat in a roasting pan from 2 to 3 tablespoons of grease. When hot put in the roast and sear quickly all over to seal the pores and prevent loss of the juice of the meat. Add 2 small turnips to the roasting pan and one-half to 1 cup of boiling water. Leave skin-side up (do not turn) and baste frequently.

If skin and fat are removed from ham before roasting, lard with narrow strips of larding pork, alternating with rows of little tufts of parsley. Add one small turnip, one small root of celeriac, a few cloves, and five or six whole peppercorns to roasting pan. Meat may be rubbed with cloves of garlic if desired. Season as in recipe above. Baste frequently.

When cooked through and nicely browned, slice and pack in cans to within one-half inch of top of can. Add the gravy from the roasting pan, with boiling water or soup stock added, so that it barely covers the meat. (There must be at least one-fourth inch space between gravy and top of can.) Cap (exhaust 5 minutes if meat and gravy have cooled; if cold, exhaust 10 minutes; if hot, exhausting is not necessary), tip (seal sanitary cans in machine), and process in steam-pressure cooker as follows:

No. 1 cans, 40 minutes at 250° F., or 15 pounds of steam pressure.
No. 2 cans, 45 or 50 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 55 or 60 minutes at 250° F., or 15 pounds of steam pressure.

FIG. 21.—A common type of jar sealer

In case meat is fat, time for processing must be prolonged 10 minutes. Backbone may be roasted in a similar way; cut meat from bones and can as already stated.

SPARERIBS

Roast the spareribs in the usual way, seasoning to taste. Cook until done, browning them nicely. With a sharp knife cut down the inside of each rib, remove the rib bone, and cut the meat into pieces that can pass through the can opening. Make gravy stock by adding water to the pan grease. Pack meat in cans and add the boiling hot gravy stock to within one-half inch of top of can. Cap, tip (seal sanitary cans), and process as follows:

No. 2 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 60 minutes at 250° F., or 15 pounds of steam pressure.

Spareribs may also be broken in the center with a cleaver or an ax (do not cut apart), folded together, and the opening between the ribs filled with pared, sliced apples and a few washed and soaked prunes. Then tie or sew together at edge, season to taste, and roast until done. Cut in suitable pieces and pack in cans with part of the cooked apples and prunes. Add gravy stock, boiling hot from the roasting pan. Seal and process as above if bones are removed. If bones are left in, process as follows:

No. 2 cans 75 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 90 minutes at 250° F., or 15 pounds of steam presure.

PORK TENDERLOIN

The tenderloin may be canned separately. Remove from carcass, wipe with damp cloth, and sear quickly in hot grease. Then season according to taste and roast until nicely browned. Cut in can lengths and pack into cans. Add hot gravy stock, prepared from pan grease with soup stock or hot water added, to within one-half inch of top of can. Seal at once, or, if packed cold, exhaust before sealing. Process:

No. 2 cans, 50 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 65 minutes at 250° F., or 15 pounds of steam pressure.

The tenderloin may also be prepared as directed and packed in cans together with suitable vegetables (first boiled and seasoned), then sealed and processed as given above.

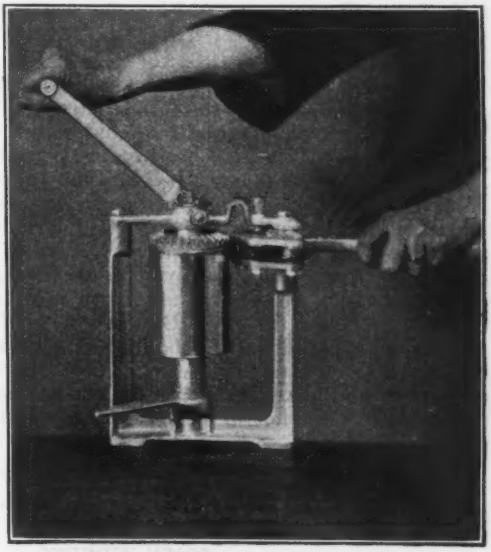

FIG. 22.—Small hand sealer for tin cans

PORK CHOPS

The chops are quickly seared in hot grease, salt and pepper (to taste) are added, and they are cooked until done and nicely browned. The bone may be removed and a short piece of boiled macaroni substituted. Then pack into cans about half full and fill in with boiled string beans, spinach, sauerkraut, or small, nicely browned potatoes. If desired, some gravy stock may be added. Exhaust 5 minutes, seal, and process.

No. 2 cans, 60 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 75 minutes at 250° F., or 15 pounds of steam pressure.

In case it is preferred to leave the pork rib on the chop, when packed in the cans, add 15 minutes to the processing period given above.

BOILED TONGUE

Tongues may be cleaned, salted, and lightly smoked, then boiled, skins removed, and packed in cans with a little soup stock or meat jelly added. They may also be cleaned thoroughly, rubbed heavily with salt, and left standing with salt sprinkled over them for 8 to 10 hours. Then boil until done, remove the skin, and pack in cans with a little of the liquid in which they were boiled (thinned with some

boiling water in order not to be too salty). In either case cap, tip, and process:

No. 1 cans, 40 minutes at 250° F., or 15 pounds of steam pressure.
No. 2 cans, 50 minutes at 250° F., or 15 pounds of steam pressure.

FRIED BRAINS

The brains should be soaked in several changes of cold water to draw out the blood, and the membranes removed. The brains may then be fried in hot grease, sprinkled with salt and pepper, packed in No. 1 flat cans, and the grease in which the brains were fried, thinned with a little hot water, added. Cap, tip, and process:

No. 1 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.

HEADCHEESE

Cut a hog's head into four pieces. Remove the brains, ears, skin, snout, and eyes. Cut off the fattest parts for lard. Put the lean and bony parts to soak overnight in cold water in order to extract the blood and dirt. When the head is cleaned put it over the fire to boil, using water enough to cover it. Boil until the meat separates readily from the bones. Then remove from the fire and pick out all the bones. Drain off the liquor, saving a part of it for future use. Chop the meat fine with a chopping knife. Return it to the kettle and pour on enough of the liquid to cover the meat. Let it boil slowly for 15 to 30 minutes. Season to taste with salt and pepper just before removing it from the fire. Bay leaves, a little ground cloves, and allspice may be added and boiled for awhile in the soup. If not condensed enough to form jelly, a little gelatin may be dissolved in cold water and mixed well with the cheese just before filling into the cans. Pack while hot in cans to within one-half inch of top. Cap, tip, and process:

No. 2 cans, 50 minutes at 250° F., or 15 pounds' pressure.

When ready to serve, thoroughly chill the can before opening. Serve cold.

FRIED KIDNEYS

The kidneys after being split open and the little sack inside removed should be soaked in several changes of lightly salted water. They should be cut into slices about one-fourth to one-half inch thick, lightly seared in hot grease, sprinkled with salt and pepper, and fried to a brown color. Then pack in cans with onions that have been peeled, sliced, and nicely browned in hot grease. Then pour in hot gravy made from adding water to the pan grease until the can is filled to within one-half inch of top. Cap, tip, and process.

No. 2 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 55 minutes at 250° F., or 15 pounds of steam pressure.

Kidneys may also be prepared as a stew or ragout and filled hot into cans. Cap, tip, and process for same length of time as for fried kidneys.

BOLOGNA-STYLE SAUSAGE

To each 10 pounds of lean beef use 1 pound of fat pork, or bacon, if preferred. Chop fine and season with 1 ounce of salt to each 4

pounds of meat, 1 ounce of the best black pepper (ground, pure) to each 6 pounds of meat, and a little ground coriander. Stuff into casings called beef "middles" or beef "rounds," and smoke for 10 to 12 hours. Cook in boiling water until the sausages float. Take up the sausage, cut in can lengths, pack into cans and add hot liquid, in which the sausages were cooked, to within one-half inch of top. Cap, tip, and process:

No. 2 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.

PURE PORK SAUSAGE

An excellent pork sausage may be made by using three parts of fresh lean pork to one part of fat pork. Cut into small pieces and pass through meat grinder, using a rather coarse plate. Weigh the meat, and for 25 pounds add one-half pound salt, one-half ounce fine sage, one-fourth ounce ground nutmeg, and from one-half to 1 ounce of black pepper. Mix thoroughly and pass again through meat grinder, using a small plate. Form into little round or flattened cakes and fry in deep fat until nicely browned. When several pan-fuls have been cooked, pour off the grease and add water to the brown parts in bottom of pan to make gravy stock. Add this while hot to the packed cans. Return the grease to pan and cook another panful of sausage cakes. When packed hot, seal cans (partly seal glass jars), and process:

No. 2 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 55 minutes at 250° F., or 15 pounds of steam pressure.

Sausage cakes may also be canned without any liquid gravy stock added. Pack cans to within one-half inch of top of can. Exhaust from 3 to 5 minutes, seal, and process:

No. 2 cans, 75 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 90 minutes at 250° F., or 15 pounds of steam pressure.

PORK CAKES

Use the following ingredients:

4 pounds lean pork.
2 pounds fat pork.
2 or 3 tablespoons salt (or salt to taste).
1 teaspoon black pepper.
1 teaspoon red pepper.
1 teaspoon Chile pepper (to taste).
½ teaspoon allspice.
2 or 3 teaspoons sage (or poultry seasoning).
½ to 1 teaspoon thyme.
2 large onions, minced.
1 clove garlic, minced (may be omitted).
2 bay leaves, powdered or broken into small pieces.
1 teaspoon celery seed, crushed (may be omitted).
6 to 12 tablespoons dry, finely chopped bread or cracker crumbs.
2 eggs beaten together.
½ cup to 1 cup of sweet milk.

Knead well, form into cakes, fry in deep fat until nicely browned, pour off excess of grease, add water ,and make gravy. Two or three cookings may be made in one lot of grease. Pack in cans, fill in with hot gravy to within one-half inch of top of can. Cap, exhaust 5 minutes (exhausting is not necessary if packed hot in cans and sealed at once). Tip, and process:

No. 2 cans, 45 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 55 minutes at 250° F., or 15 pounds of steam pressure.

LIVER SAUSAGE

Remove the membrane and cut away the large blood vessels. Soak in water 1 to 2 hours to draw out blood. Boil until done. When cooled put through a food chopper or grate fine. Take half as much boiled fat pork as liver. Divide this fat in two portions; chop one portion into ¼-inch cubes; pass the other portion through the food chopper; mix all together thoroughly; add salt, ground cloves, pepper, and a little grated onion to taste. A little thyme and marjoram may be added to suit taste. (For a liver weighing 3 pounds add 1½ pounds fat pork, from 6 to 8 teaspoons salt, 1 teaspoon cloves, 1 teaspoon pepper, 2 small onions, ½ teaspoon thyme, and pinch of marjoram.) This mixture is stuffed in large casings (if no casings are available, make casings of clean white muslin). Cover with boiling water, bring to a boil, and boil for 10 minutes. Pack in cans and fill in with the water in which the sausages were boiled. Cap, exhaust 5 minutes if cooled (if packed hot, exhausting is not necessary), tip, and process:

No. 2 cans, 50 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 65 minutes at 250° F., or 15 pounds of steam pressure.

This liver sausage may also be made from the raw liver and raw pork. In that case proceed in same manner as just described, but process the cans 10 minutes longer at temperature given. It may be served hot or cold.

HOG-LIVER PASTE

1 medium-sized liver (about 3 pounds).
1½ pounds fresh fat pork.
¼ pound butter.
¼ pound flour.
1 teaspoon pepper.
1 teaspoon ground cloves.
1 small onion, grated.
3 eggs.
Milk (as needed).
Salt to taste.

The fat is chopped very fine. The butter and flour are rubbed together in a kettle placed over the fire, then thinned with milk to a very soft gruel. Into this put the chopped fat. Cook over a very slow fire, in order not to scorch, until fat is pretty well cooked out.

In the meantime get the liver ready. Wash well, remove the skin, and cut away all veins and membranes. Scrape or pass through a meat grinder, then place this mass on a fine sieve or strainer. Into it pour the warm thickening little by little and together with the liver rub through. Into this liver mass as passed through the sieve stir 3 yolks of eggs, 1 teaspoon pepper, 1 teaspoon ground cloves, plenty of salt (about 2 tablespoons or more, according to taste), 1 small grated onion, and the beaten white of the 3 eggs. Put into cans that must not be entirely full. Cap, exhaust from 5 to 8 minutes, tip, and process:

4-ounce glass jars, 40 minutes at 250° F., or 15 pounds of steam pressure.
No. 1 flat tin cans, 45 minutes at 250° F., or 15 pounds of steam pressure.

A very good liver paste can be made by taking liver and fat pork, as in recipe above, pass through meat grinder twice, stir well with 2 tablespoons salt, 1 teaspoon pepper, 1 teaspoon ground cloves, 1 finely chopped medium-sized onion, 6 tablespoons cracker or dried-bread crumbs, 3 eggs beaten together, and one-half cup of sweet milk. Fill into cans; cap, exhaust, tip, and process as stated.

XUM

PORK-HEART GOULASH

2 pounds cleaned pork heart.
2 ounces butter or any good fat.
2 onions (medium size) chopped fine.
1 carrot (medium size) finely sliced.
1 stalk celery cut in small pieces.
1 pint tomatoes (canned or fresh).
1 bay leaf, broken in pieces.
6 whole cloves.
6 whole peppercorns.
1 blade mace.
1 pinch thyme.
1 tablespoon parsley (finely chopped).
Salt and pepper to taste.
Paprika to taste.
A little flour.

Cut the hearts into 1-inch cubes and sprinkle with flour mixed with salt and pepper. Melt butter or fat in a frying pan. When hot add the chopped onions, carrot, and celery, and brown lightly. Add the meat, prepared as stated, and brown while stirring frequently with a spoon to prevent scorching. When nicely browned empty into a stewpan, add bay leaves, cloves, peppercorns, mace, and thyme tied up in a little bag of cheesecloth, also tomatoes or tomato purée. Cover with soup stock or water and simmer for 45 minutes (for 2 hours if to be served at once and not canned). Remove the bag of spices and season by adding salt, pepper, and paprika to taste. Soy or Worcestershire sauce may be added in small quantities if desired. Add the parsley. Fill hot into cans, seal at once, and process:

No. 2 cans, 60 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 70 minutes at 250° F., or 15 pounds of steam pressure.

If the different ingredients in this recipe are not at hand, a good goulash may be made by using meat, fat, onions, tomatoes, flour, salt, and pepper, leaving out the other ingredients.

JELLIED PIGS' FEET

The pigs' feet are scalded, scraped, and cleaned thoroughly, then sprinkled lightly with salt and left for 3 to 5 hours. The feet are then washed, put into the steam-pressure canner on top of wire rack (so they are not directly on bottom of canner), with just water enough to cover them. Cook at 15 pounds of pressure for 20 to 30 minutes. Let steam escape slowly, open the canner, remove feet, and carefully pick out all bones. Strain the liquid in which the feet were cooked and add the meat. Add, according to taste, salt, pepper, and a small quantity of ground cloves. Reheat to boiling point and pack hot in inside-lacquered tin cans or in glass jars. Seal while hot (partly seal glass jars) and process:

4-ounce glass jars, 40 minutes at 250° F., or 15 pounds of steam pressure.
No. 1 flat tin cans, 45 minutes at 250° F., or 15 pounds of steam pressure.
No. 2 tin cans, 60 minutes at 250° F., or 15 pounds of steam pressure.

When ready to serve, chill the can thoroughly before opening. Serve cold and garnish with sliced lemon.

SCRAPPLE

The cleaned head, feet, all bones cut out of fresh or cooked meat with what meat clings to them, the liver, heart, and all meat scraps not otherwise used may be utilized for making scrapple. Put over the fire in cold water enough to cover, bring to a boil, and cook until meat falls from the bones. The cleaned skin cut off when preparing

the fat for rendering lard can also be used. Put it into the steam-pressure cooker on top of rack and add cold water to cover the skin. Cook at 10 to 15 pounds' steam pressure for one hour. The bones, head, feet, liver, etc., also may be cooked under steam pressure, whereby considerable time is saved, but should not be cooked together with the skin, as it will be more difficult to separate the small pieces of bones when mixed with the cooked skin. Strain the resulting liquid or soup from the bones and from the skin. If too greasy, part of the fat may be skimmed off. Carefully pick out all bones from the meat. Then chop the meat and boiled skin fine and return to the soup. Put over the fire again and bring to a boil. Season to taste with salt and pepper (generally 2¾ ounces of salt and one-half ounce of pepper for each gallon of liquid). To this boiling soup and meat add slowly under constant stirring, to prevent lumpiness, a mixture of corn meal, buckwheat flour, and wheat middlings until it is as thick as mush. (The mixture is in the proportion of 50 parts of fresh corn meal, 25 parts of buckwheat flour, and 25 parts of clean wheat middlings.) Stir vigorously while the scrapple is allowed to cook for from 10 to 15 minutes. Remove from fire and pour hot into cans to within one-half inch of top. Seal at once and process:

No. 2 cans, 70 minutes at 250° F., or 15 pounds of steam pressure.
No. 3 cans, 85 minutes at 250° F., or 15 pounds of steam pressure.

The scrapple should be removed from the can, sliced, and browned in a frying pan before serving.

COOK PORK WELL

ALL pork and pork products should be well cooked in order to prevent the possibility of their causing the disease known as trichinosis.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1924

REVISED

U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 1186 new Feb. 1932

Rev. ed. follows

PORK ON THE FARM

KILLING, CURING, AND CANNING

WARM, freshly slaughtered pork carcasses should be chilled to a temperature between 34° and 40° F. within 48 hours, preferably within 24 hours, after slaughtering. Bacteria which may cause spoilage if their growth is not promptly checked by chilling are often present in the tissues of the hog.

Meat as it cures will normally develop a more uniform, desirable flavor if it can be held at an even temperature of about 38° F. On the farm temperatures are not easily controlled, but every effort should be made to approximate those mentioned.

Proper slaughtering equipment will make it possible to clean carcasses thoroughly so that full use can be made of all the parts, including the head and feet.

Clean, well cut, smoothly trimmed meat can be cooked and used to better advantage than pieces that have been improperly prepared.

Farmers who plan to sell home-cured products will find that a uniform flavor and an attractive appearance will be real assets.

Washington, D. C.

Issued February, 1921
Revised February, 1932

PORK ON THE FARM

KILLING, CURING, AND CANNING[1]

K. F. WARNER, *Animal Husbandman, Animal Husbandry Division, Bureau of Animal Industry*[2]

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IMPORTANCE OF PROPER METHODS

MEAT IS A valuable and perishable product. Unless it is handled properly, the waste from unused, spoiled, and unpalatable parts more than offsets the possible advantages of farm curing.

Success in preparing meat foods depends upon strict attention to the methods used. No details of these methods are difficult, but all are important. Great care is needed when a farmer markets part or all of his hogs as meat and sells the products in his own community. Most consumers desire a uniform trim and flavor. To satisfy and make permanent an exacting trade, the pork must be cut and handled with the greatest care.

There are many different ways in which to prepare pork products. The best one for each farmer is that which suits his family or community. However, certain general principles of cutting and curing should be observed by all.

[1] This bulletin supersedes Farmers' Bulletin 913, Killing Hogs and Curing Pork, and is a complete revision of Farmers' Bulletin 1186, Pork on the Farm, Killing, Curing, and Canning, by F. G. Ashbrook, junior animal husbandman, and G. A. Anthony, lay inspector, Bureau of Animal Industry, and Frants P. Lund, Office of Cooperative Extension Work.

[2] Information on canning pork was furnished by Florance B. King, specialist in foods, Bureau of Home Economics.

EQUIPMENT

Elaborate and expensive equipment is unnecessary, but certain tools are essential and others are very desirable. (Fig. 1.) Most useful of all is the curved 6-inch skinning knife. It may be used for sticking the hogs, raising the gambrel tendons, shaving and dressing the carcass, and cutting and trimming the meat. It is also the best knife for skinning cattle and lambs. Once the user becomes accustomed to its shape, the curved knife will be found to cut more easily and smoothly than the straight butcher knife. A narrow-bladed boning knife, the narrower the better, is needed in preparing boneless roasts and meat that is to be canned.

In sharpening a knife a grindstone commonly is used first. With it an even bevel, about one-fourth inch wide, is put on each side of the blade. An oilstone is used to give a smooth, keen edge. A smooth, high-quality, 9 to 14 inch steel is essential in keeping the knife sharp. The steel is not used to sharpen a knife but to keep a

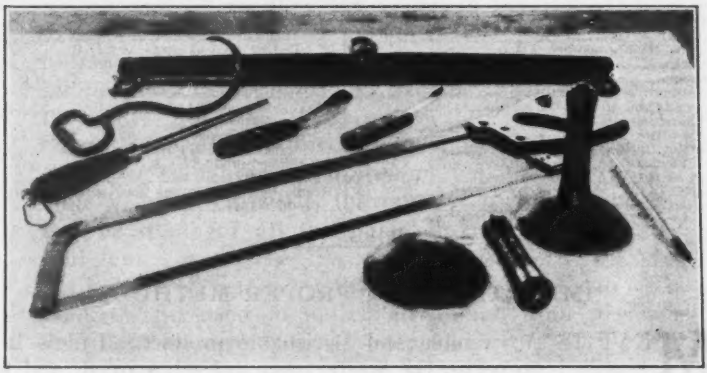

FIGURE 1.—Equipment for use in slaughtering and dressing hogs: Gambrel (single-tree), hook, smooth steel, skinning knife, boning knife, saw, bell-shaped hog scrapers, and thermometer

sharp knife in good cutting condition. Use of the steel removes bits of fat and tissue from the edge of the knife and straightens or removes the "set" from the microscopic teeth that compose the edge. When they are purchased, most steels, even those of high quality, are too rough to be serviceable and should be rubbed down with an emery stone until the surface is smooth and glassy. A person not skilled in the cross-saber method of steeling used by experienced butchers may hold the knife in the left hand with the blade slanting downward and the point resting on the table and rub both sides of the edge lightly with the steel. One can form the habit of steeling the knife briefly but frequently while using it.

The meat saw should be 24 to 28 inches long. A saw of this length can be used instead of a cleaver for splitting either hog or cattle carcasses. The bell-shaped hog scrapers, an adaptation of the old-time candlestick holders, are the best hand instruments yet devised for removing the hair, scurf, and dirt. A fairly heavy steel scraper, with a bell that will take a rough edge on the outside when rubbed

with an emery stone or file, is the most efficient. A scraper 4 inches in diameter can be used more easily than larger sizes, whereas smaller scrapers are usually too light and do not hold their shape. A singletree with open hooks makes a more desirable gambrel for hanging the carcass than the customary notched stick as there is less danger of the carcass slipping off the singletree. When many hogs are to be killed, the use of commercial metal gambrels is suggested.

An ordinary 50-gallon hardwood barrel will serve to scald a hog weighing up to 250 pounds, without much difficulty. A metal trough or watering tank 5 to 6 feet long, 30 inches wide, and 15 to 24 inches deep may be converted into a combination water heater and scalding tank. It is set up on bricks or put over a trench. The sides are banked with earth and a fire built beneath. (Fig. 2.) This arrangement permits holding the temperature of the water at the proper point for scalding any number of hogs.

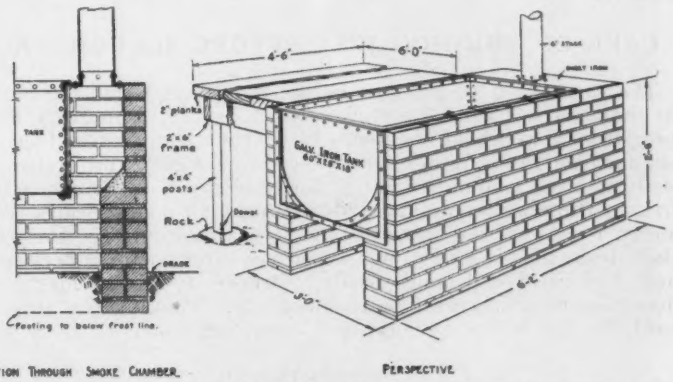

FIGURE 2.—Combination water heater, scalding tank, and scraping table. The tank may also be set on the ground over a trench and banked with sheet metal or earth

The most convenient scraping table is 4½ feet wide, 2½ feet high, and 4 to 8 feet long. (Fig. 2.) On a table of this width the hog can be laid crosswise so that one man may scrape the rear end while the other scrapes the head. A thermometer that will register up to 212° F. is desirable so that the temperature of the water can be correctly gaged.

A hog hook for use in scalding the animal; pans or tubs for holding edible and inedible offal; a block and tackle, ladder, rack, or other means for hanging and chilling all the carcasses that are to be dressed; and plenty of both hot and cold water should be provided before operations begin. A small blowtorch and wire brush will help materially in singeing and scrubbing the head and feet.

A salimeter (known also as a salometer and salinometer) operating on the same principle as the wet-battery hydrometer, may be used in measuring the saltiness of the curing brine. It is inexpensive, may be obtained at any butcher's supply house, and makes it possible to gage accurately the strength of the pickle needed to produce fully cured hams or mild bacon.

MEDIUM-WEIGHT HOGS MOST DESIRABLE FOR SLAUGHTER

A hog weighing from 180 to 225 pounds alive will produce moderate-sized cuts and usually a very desirable proportion of fat and lean. Heavier hogs will produce more lard.

When hams and shoulders are cut according to the methods later described, each will weigh about 7 per cent of the live weight of the hog. Each bacon strip and loin will weigh about 5 per cent and the head 7 per cent. The weight of lard rendered from a 200-pound live hog will range between 9 and 13 per cent of the live weight of the hog; and that from a 250 to 300 pound hog, between 14 and 18 per cent.

A smooth, thrifty, moderately well-finished hog will usually produce a desirable quality of meat. Of course the animal should be healthy.

CARE OF THE HOG JUST BEFORE SLAUGHTERING

The care of an animal just before it is slaughtered has much to do with getting a good "stick," which is very important because meat from a well-bled hog keeps better than that from a hog which has not bled well. A hog bleeds more thoroughly and dresses more easily after a 24-hour fast but it should be given all the water it will drink. Running the animal or wrestling with it often causes a temporary fever. If the animal is killed in this condition, the meat is likely to be bloody and slimy, sometimes referred to as fiery. Such meat looks bad and spoils easily. Bruises and whip marks cause bloody spots which must be trimmed out. Penning the animal by itself the day before butchering is recommended.

STICKING

The blood will drain out more completely if the hog is stuck without being shot or stunned with an ax. Furthermore, sticking without stunning, which is the common commercial practice, is not considered to be more cruel than the other methods. To get the hog in a proper position for sticking, reach under the animal and grasp its opposite front leg; then roll it upon its back and hold it as shown in Figure 3. The following sticking method is recommended for the beginner.

The man doing the sticking takes a position squarely in front of the hog, holds down the snout, and opens the skin for a distance of about 3 inches in front of the breastbone. He then inserts the knife, edge downward, straight in toward the breastbone, not downward, as is often done. When the breastbone is reached, he follows downward with the point of the knife until the knife slips under the breastbone and between the ribs. He then pushes the knife in about 1 inch and directs the cut first downward toward the backbone, then forward toward the head. Care should be taken to hold the animal squarely on its back and to keep the knife in the center so as not to stick a shoulder. It is both difficult and unwise to stick the heart. Let it pump out the blood as long as possible.

XUM

SCALDING

Slow scalding is usually best. At slaughterhouses where steam is available to maintain the scalding water at a steady temperature, the water is usually held at 140° to 144° F. With these temperatures it will take from 3 to 6 minutes to loosen the hair and scurf, but there is little or no danger of setting the hair or cooking the outside of the skin. In the fall of the year when the winter hair is beginning to grow and most pigs are difficult to scald, temperatures as high as 146° to 150° are sometimes used.

On the farm, where it is impossible to reheat the water promptly, temperatures of 155° to 165° often must be used at the beginning so that the water will not become cold before the hog is completely cleaned. In using water as hot as this, care must be taken to keep the

FIGURE 3.—Sticking the hog. Note that the feet of the man holding the hog are pressed against the shoulders of the animal to prevent its rolling

hog in motion (fig. 4) while in the water and to pull it from the barrel and give it frequent chances to cool and air. This lessens the danger of setting the hair. If at all possible, it is advisable to have plenty of boiling water available so that lower temperatures can be used at the beginning and more hot water added if necessary. The combination heater and scalding tank shown in Figure 2 is the most convenient means for obtaining the proper temperature.

Lime, rosin, or other substance that will make the hair cling to the scraper and pull out more easily is often put into the water. Many persons use some form of soap or alkali. This makes the hair a bit slippery but helps to loosen the dirt on the skin. The proper temperature of the water, however, is more important than any substance that can be put into it.

Twenty-five to thirty gallons of water is ordinarily enough to scald a hog in a 50-gallon barrel. Light or medium-weight hogs can be

practically immersed in the barrel. The animal is held with a hook in the lower jaw. In scalding large hogs the ham end of the animal is immersed first and then the head end. When the latter end is immersed, one leg of the hog is held with the hook caught in the gambrel tendon. At this time, a third man, if available, can remove most of the hair from the hot legs and flanks even though the animal is kept in motion.

FIGURE 4.—Scalding the hog. Keeping it in motion lessens the danger of setting the hair and works the water into the wrinkles of the skin

SCRAPING

When the hog is completely scalded turn it crosswise on the table. One man should grip the hind legs with both hands and twist off the hair, then pull off the dewclaws and toes, while hot, with a hook, and scrape the hog from fore flank to tail. (Fig. 5.) Another should scrape the hair from the wrinkles and rough parts of the head and forelegs. After some experience, one will learn to stretch the skin by moving the leg or head so as to smooth the wrinkles

and make scraping easier. If patches of hair have not been thoroughly scalded, it is often possible to loosen them by covering them with sacks or hog hair and pouring hot water on them.

After the hair and scurf have been scraped off, much of the dirt can be removed by rinsing the carcass with warm water and pressing the bell scraper flat against the carcass, instead of tipping it on its edge as before. (Fig. 6.) A blowtorch and wire brush will now be very useful in singeing and scrubbing the head and feet. (Fig. 7.)

The scraped, singed carcass is ready to be rinsed with cold water and shaved. (Fig. 8.) Wash and shave the entire carcass. It is now ready to be hung up. To insert the gambrel, open the skin at center of hind leg just above the foot and directly over the tendons. Push the skin aside with the knife and cut down to the bone at the side of the tendons, as shown in Figure 9. Make a similar cut on the other side of the tendons. Put the knife aside and raise tendons with the fingers to receive the gambrel. Be sure the gambrel stick or hook engages both tendons. After the gambrel is raised and the carcass is suspended, wash the carcass again with cold water and shave it again.

FIGURE 5.—In scraping the carcass tilt the scraper on its far edge and pull forward. Use both hands and plenty of pressure

OPENING AND DRESSING THE CARCASS

Opening a hog carcass and dressing it are really very simple operations, particularly if the hog has been kept off feed for 24 hours before slaughter. There are many different methods, but the following should be easily understood by the beginner.

Insert the skinning knife, edge up, into the sticking place and cut up through the full length of the breastbone. (Fig. 10.) If the breastbone is very hard to cut, as it may be in older hogs, the cut may be made about one-fourth inch to one side of the middle where there is softer bone or cartilage. It is sometimes necessary to use the saw.

Now begin at the other end of the hog and cut down between the hams, taking care to keep the knife in the center. As the hams open, the white membrane which marks the exact middle can be seen. Follow this, if possible, to the bone. If one misses the middle "seam," correction may be made by a small bony projection that can be felt with the finger just underneath the front (forward side) of the pelvis. If the knife is directly above this projection, there is usually little difficulty in cutting the hams apart. Use the saw if necessary. In dressing a barrow, loosen the penis and let it hang, to be removed later with the "bung." Insert the handle of the knife in the opening made in splitting the hams, with the point of the knife pointing outward. Guard the heel of the blade with the forefinger and thumb of the right hand and cut down the middle line of the belly until this cut joins the split breastbone. (Fig. 11.)

FIGURE 6.—To remove the dirt, press the scraper flat against the wet skin and move it rapidly back and forth. This creates a suction that will remove much dirt and stain

Allow the intestines to roll out and hang. Raise the bung by slipping the knife into the pelvic cavity and loosening the bung on both sides and at the back. Pull it down toward and past the kidneys. Be careful to cut it free from the kidney fat. (Fig. 12.)

FIGURE 7.—Cleaning the head. The head is scraped and singed, then scrubbed with the wire brush

It is at this point that many inexperienced farm butchers expect to encounter trouble. The operation, however, is almost complete

and no difficulty need be anticipated. With the left hand grasp the intestines firmly just below the kidneys at the point where they appear to be attached to the backbone. Push down slowly but firmly until they loosen from the back. Free the liver by running the fingers of the right hand behind it and pulling it away from the back. Still holding the intestines in the left hand, cut through the diaphragm to the backbone. (Fig. 13.) Extend the cut around the white fibrous diaphragm, which is parallel to the ribs, to the breastbone and down the breastbone to the throat. This last cut loosens the heart and lungs in the chest cavity. Still holding the intestines with the left hand, repeat the cut on the left side of the carcass, crossing the right hand over the left. It may sometimes be necessary to cut the back artery from the backbone, thus permitting the left hand to pull the entire offal out of the carcass. The gullet is still attached to the throat but one cut of the knife will free it.

FIGURE 8.—In shaving the animal, stretching the ears, jowls, legs, and other parts will smooth out the wrinkles and make shaving easier

If the carcass is fouled in dressing, thoroughly wash it in cold water; then split it. Splitting with a saw down the center of the

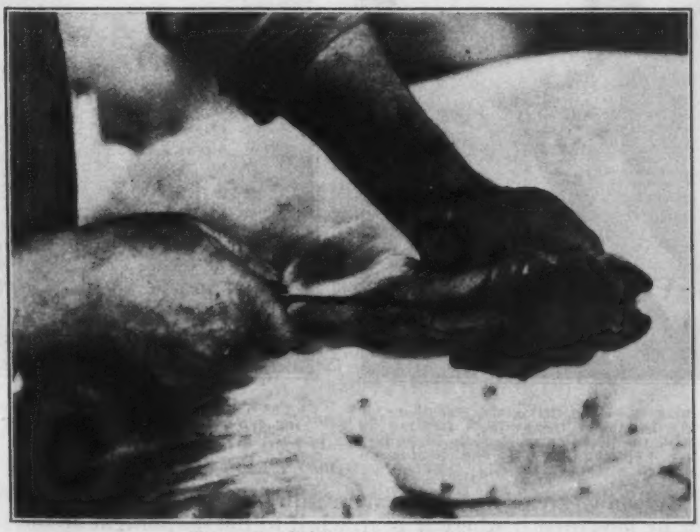

FIGURE 9.—Raising the gambrel tendon

backbone is recommended. This eliminates the savory country-style backbone piece or chine but gives a larger quantity of meat suitable for curing and canning.

FIGURE 10.—In splitting the breastbone, if the handle of the knife is slanting up with the point down there is little danger of cutting up too far and opening the paunch

FIGURE 11.—Under this method of opening the carcass there is no danger of cutting the intestines

The split carcass will chill more rapidly if the leaf fat is pulled out by loosening it where it is attached to the diaphragm at the last

rib and stripping or fisting it up and out. (Fig. 14.) It is also much easier to remove the leaf fat when the carcass is hot than after it has been chilled.

FIGURE 12.—The offal will not fall unless the pig has been fed shortly before slaughter

FIGURE 13.—In removing the intestines, grasp the offal carefully and firmly so that it will not fall and tear

In commercial practice, where carcasses are inspected, the head of the hog is unjointed before the carcass is opened. This operation requires a little skill but is readily learned. A cut is made about one-half inch above the ear, at right angles to the backbone, and clear

through the left jowl and top of the neck and throat. The left ear is held with the left hand, and the cut is made in to the backbone. This leaves the head hanging by the bone and right jowl. The cut should meet the neck joint where the first neck bone joins the head. The dished "button" end of the backbone fits over the head end of the joint in the same manner that the fingers and palm of one hand can be made to inclose the clenched fist of the other. The knife loosens the membranes at the lower or head end of the joint, the end of the "fingers" of the upper or inclosing "hand." As the joint opens, the knife moves upward along the "knuckles" of the clenched "fist," across its top, and down the far side. The whole joint is about 1½ inches wide. Packers often unjoint the head by cutting across above the ears, peeling off the jowls, and allowing them to remain upon the carcass.

FIGURE 14.—The warm leaf fat is pulled out by loosening it at the rib end and fisting it up and out

CHILLING THE CARCASS

The tissues of many freshly slaughtered hog carcasses contain bacteria that are capable of spoiling the meat unless their growth is promptly checked. Packers have practically solved the problem of sour meat by chilling the fresh, warm carcass to a temperature of 34° to 36° F. within 24 hours after slaughter and by holding the meat at 36° to 40° while it is curing. On the farm, butchering should be done when the weather is as favorable as possible. When necessary, the freshly slaughtered carcass should be protected from freezing by hanging it in a shed or wrapping it with a sheet; but at this time high temperatures, particularly those above 40°, are often the cause of spoiled meat.

Many communities in the South have access to local cold-storage plants with facilities both to chill the carcass and to store the curing meat. The warm sides are brought in immediately after slaughter, and the owner returns one or two days later to cut the pork and put the meat in cure in the drawer, box, or bin assigned to him. The fresh cuts, lard, etc., are taken home. When nights are fairly cool the hogs are often dressed in the afternoon and allowed to hang overnight. The meat is cut and trimmed the next morning and the curing pieces taken to cold storage. Where a community cooperates with a cold-storage plant nominal charges to the farmers can often be obtained.

If the weather becomes warm and no cold storage is available, the warm sides may be cut up and the individual pieces hung up to air and cool, or immersed in a weak, ice-chilled salt brine containing about 8 pounds of salt to each 7 gallons of water. Sometimes insufficiently cooled pieces are salted with a dry-cure mixture and spread on a rack where they will have as much ventilation as possible. None of these methods is as safe or as satisfactory as storing the meat at the proper temperature, either natural or artifical.

CARE OF THE OFFAL

The principal edible parts of the offal are the liver, heart, tongue, and fat. The liver should be separated from the remainder of the offal and the gall bladder removed. The small, upper end of the gall bladder can be lifted with the thumb and finger and the bladder peeled out. The heart is cut off through the auricles or "ears." The tongue is removed at its base. All three parts should be washed promptly. They may be chilled in cold water and hung up for further chilling and drying. The caul fat can be separated from the stomach with the hands. The small intestines are removed or "run" from the ruffle fat by pulling the fat in one direction with the right hand and the intestines in the opposite direction with the left. The ruffle fat is then peeled off. This fat, if not fouled in dressing, should be saved for lard. It should be thoroughly washed and promptly chilled in cold water. After chilling it is hung up to drain and dry before being rendered.

CUTTING THE CARCASS

There is no one best method for cutting a pork carcass. The choice depends on how the pork is to be used. If it is to be sold the cuts should conform to local preferences. When the carcass is to be shipped it is customary to leave the head on, for convenience in handling and economy of shipment. If the meat is to be preserved by freezing, as is done in northern localities, each piece should be of a size and character suitable for a single meal. The purpose of the method described here is to produce the maximum quantity of meat that can be cured and stored for summer use and the minimum number of parts that must be used fresh. (Fig. 15.) This cutting method separates the thick, lean ham, loin, and shoulder from the thinner bacon strip, fat, and head.

If the head was not removed in dressing, lay the carcass on its side and cut off the head about one-half inch behind the ears. Cut to

the bone and entirely around it. The head may then be twisted off at the neck joint.

FIGURE 15.—Cuts of pork: *a*, Ham; *b*, loin; *c*, bacon strip; *d*, shoulder; *e*, head; *f*, feet

If the carcass was not split when warm, now is the easiest time to split it. Place the cold carcass, with the head removed, upon its back with the hams extending beyond the table. Stand between the hams, and start the saw through the forward or shoulder end of the backbone. Saw from the inside toward the skin. As the shoulders are split, the two sides will spread apart, permitting more freedom in sawing the loin and last the hams.

A 3-rib shoulder is removed by sawing between the third and fourth ribs parallel to the head cut. (Figs. 15, *d*, and 16.) A long ham is cut off just behind the rise in the pelvic arch and at right angles to the direction of the hind leg. The more popular short ham is cut through the second vertebra behind the rise. To make the desirable square-top ham, the saw should be at exact right angles to the shank. (Figs. 15, *a*, and 17.)

Cut the thick loin (Fig. 15, *b*) from the thin bacon strip (*c*) just below the curve in the backbone at the shoulder end and at the edge of the tenderloin muscle at the ham end. Lay the middle skin side down,

and saw across the ribs, as shown in Figure 18. Remove the back fat from the loin by cutting down both sides of the loin, as shown in Figure 19, then raise the fat, and loosen it down the center. If the carcass has been split down the center the whole muscle of the

FIGURE 16.—Removing the 3-rib shoulder

loin can be easily boned out for sausage or for canning. Unboned, it is suitable for chops and roasts. It may also be given a mild cure.

If the leaf fat is still on the bacon strip, cut it free along the rib end, loosen it by bending the bacon over the edge of the table, and

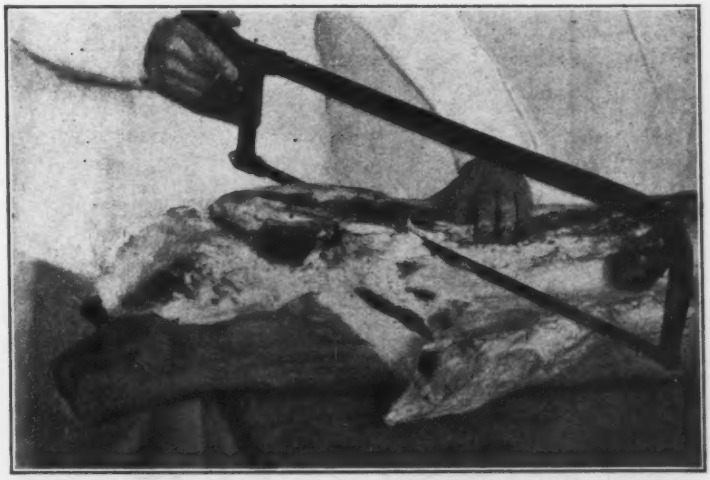

FIGURE 17.—In cutting off the square-top ham, saw at right angles to shank

then pull it out. (Fig. 20.) In removing the spareribs the edge of the knife is kept against the ribs. This will leave most of the meat on the bacon. (Fig. 21.)

FIGURE 18.—In sawing the loin from the bacon strip, cut and saw through the leaf lard if it was not pulled off when warm

FIGURE 19.—Removing the back fat from the loin. One-fourth to one-half inch of back fat is usually left on the loin

FIGURE 20.—Bending the untrimmed bacon strip over the table edge to loosen the cold leaf fat

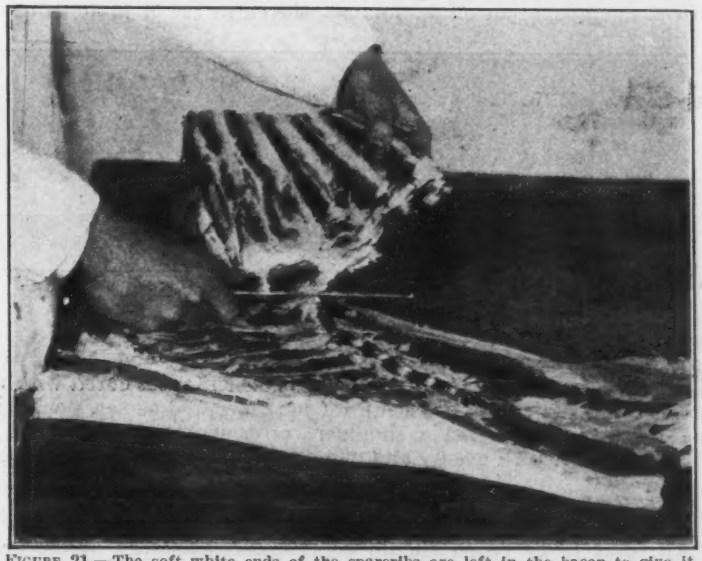

FIGURE 21.—The soft white ends of the spareribs are left in the bacon to give it a smoother, more attractive appearance

The jowls may be cut from the head, trimmed, and cured. After the eyes, nasal passages, teeth, and incompletely cleaned parts of the ears and snout have been removed, the rest may be used with the liver, heart, and tongue for cooked products.

The lean in all trimmings should be saved for sausage. A proportion of two-thirds lean and one-third fat is the popular combination. Many persons prefer to remove the skin from the fat (Fig. 22) before cooking the lard as the fat alone renders more satisfactorily. If the skin is clean, however, it need not be removed.

FIGURE 22.—In skinning the fat trimmings, keep the knife parallel with the table and the edge turned slightly downward toward the skin

PICNICS AND SHOULDER BUTTS

The trimmed 3-rib shoulder may be divided into a shoulder butt, a picnic shoulder, and plate, if desired. (Fig. 23.) The top third of the shoulder is cut off as the butt, the extra fat or plate being re-

FIGURE 23.—A, Shoulder butt; B, picnic shoulder; C, plate; D, trimmings

moved from the lean butt. This 2 to 4 pound butt makes a very acceptable fresh roast. If the butt is to be cured, the end of the shoulder blade is ordinarily removed and the boneless piece cured with the bacon. The plate may be cut up for lard or cured as salt pork with the fat back. The picnic shoulder, or remaining shank end, is trimmed or rounded evenly and cured with the hams and shoulders.

TRIMMING CUTS FOR CURING

All meat to be cured should be trimmed smoothly and evenly. Care should be taken to remove all blood spots, to be looked for es-

pecially in the shoulder. The brisket and ragged neck pieces should be cut from the shoulder, the tail and flank from the ham, and the uneven edges from the belly. Leave some fat as protection on the face or inside of the ham. Excess fat on hams and shoulders may be removed, though the pieces will store more satisfactorily in summer if not skinned. The bacon should be flattened out with the hands or with the side of a cleaver, and squared on all four sides. The jowls and fatbacks, if these cuts are to be cured, should be treated in the same way. Spareribs and loins may be given a light cure without further trimming. Figure 24 and the cover page show the difference between poorly trimmed and properly trimmed hams, bacon, and shoulders.

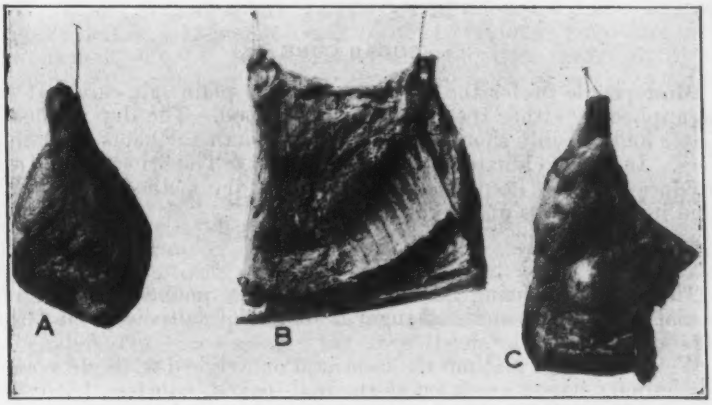

FIGURE 24.—Poorly trimmed ham (A), bacon (B), and shoulder (C)

CURING PORK

In commercial packing houses, well-chilled pork cuts are cured at a temperature of about 38° F. This temperature can not be maintained on the farm, but the curing meat should be put in a cool place where the temperature will remain as nearly uniform as possible. If the meat has been frozen it should be defrosted to a temperature of 34° to 40° before it is put in cure.

STANDARD PRESERVATIVES

SALT

Salt preserves and dries meat, but in excessive quantities will impair the flavor and make the lean muscles undesirably hard. Insufficient quantities will fail to check the development of putrefactive bacteria. A good grade of dairy or table salt is desirable.

SUGAR

Sugar is used mainly to lessen the harshness of the straight salt cure and to improve the flavor and texture of the meat. Brown or cane sugar or molasses may be used. Each gives its own characteristic flavor to the meat. Select the one that gives the desired flavor.

SALTPETER

Saltpeter (nitrate of potash) preserves and dries the meat but is used almost entirely because it effectively fixes the bright-red color of cured meat. Nitrate of soda may replace saltpeter. It is a little stronger, however, and 1.7 ounces of nitrate of soda will replace 2 ounces of saltpeter. The exact quantity of saltpeter or of nitrate of soda to be used should be weighed and mixed thoroughly in the curing mixture. It is undesirable and unnecessary to use more of either saltpeter or nitrate of soda than is recommended.

PEPPER

Pepper adds flavor and tends to repel insects, but, contrary to general belief, it is not a preservative.

SUGAR CURE

Most people prefer the sugar cure to the plain salt cure. It can be applied by either the dry or brine method. The dry method is faster and possibly should be used in the South for hams and shoulders. In colder climates either may be used. The brine method will produce a milder bacon than the ordinary dry method and may be used in all sections of the country.

BRINE METHOD

The standard curing mixture for each 100 pounds of meat is 8 pounds of salt, 2 pounds of sugar, 2 ounces of saltpeter, and 4½ to 6 gallons of water.

Weigh the meat and put the measured or weighed water (8 pounds per gallon) into a crock or clean, well-soaked, odorless, hardwood barrel. Pour the curing ingredients into the water and stir until dissolved.

If a salimeter is available use a little less water to dissolve the salt than is suggested. Then test the strong pickle and dilute to proper strength. The standard curing mixture dissolved in 4½ gallons of water will make a pickle that tests about 75° on the salimeter. This is excellent for curing hams and shoulders. When 5½ gallons of water is used the weaker pickle, testing 65°, will produce a desirable mild bacon.

If the brine is sterilized by boiling, it should be thoroughly cooled before being used. Under ideal conditions both the brine and meat will be at a temperature of about 38° F. when the pack is put down.

The chilled hams and shoulders are packed away, skin side down, in the crock or barrel. Fit them closely together, but take care not to squeeze them out of shape. Pour in the cold, 75° pickle until the pack begins to shift or float a little. This movement permits the brine to come in contact with all parts of the meat. Then add a clean weight just heavy enough to keep the meat below the surface and cover the pack with pickle. Put on the weight first, or the pack will float out of shape.

XUM

On the fifth, fifteenth, and thirtieth days after being put down, the hams and shoulders should be overhauled; that is, they may be placed in another barrel and recovered with the same brine, or they and the brine may be removed and then replaced in the same barrel. This overhauling remixes the pickle and insures that the brine will come into contact with all parts of each cut.

The bacon strips are usually packed skin side down, each piece being crosswise of the one below it. Jowls or shoulder butts may be used to fill any unoccupied spaces. The milder, 65° pickle is used for bacon. Overhauling this meat on the third and tenth days is usually sufficient.

CURING TIME

Hams and shoulders are generally held in brine four days per pound; that is, a 15-pound ham will not be removed from cure until the sixtieth day. It is probably better to allow the small picnic shoulders 25 to 30 days in cure. Bacon can be cured in 1½ to 2 days per pound.

A thin scum of white mold normally forms on top of the brine. If, however, the mold becomes heavy and hard or if the pickle becomes ropy so that it drips from the fingers like sirup, the pickle should be changed. Remove the meat, scrub it thoroughly with a brush and warm water, and repack it in a cleaned and scalded barrel. The new brine, made after the original recipe, should be diluted to as nearly the saltiness of the old brine as possible. If the hams and shoulders have been in cure a week, use 70° brine instead of 75°; if more than two weeks, use 65° brine. Maintain the original curing schedule. This process may not save the meat but it is the only course available.

CURING LOINS, SPARERIBS, AND OTHER FRESH CUTS

Often the quantity of loin, spareribs, backbone, and other fresh cuts at butchering time is greater than the family can use promptly and economically. These cuts can be preserved by curing as well as by canning and, in the Northern States, by freezing.

A mild 55° to 65° brine, which contains about 6 gallons of water, is best for the ribs. They can stand a light smoke after a week in cure but are acceptable without smoking.

The loin may be given a light smoke after about three weeks in a 65° brine or may be used without smoking.

Owing to the quantity of lean meat exposed, these cuts are likely to become dry and harsh if given a long cure or smoke. It will be more satisfactory to use the pickle mainly as a means for storing them a short time. Keep the temperature of this meat as near 38° F. as possible while it is curing.

CURING MEAT IN SUMMER

Hogs may be slaughtered in the summer and the meat preserved by the brine-curing method. The pork should be promptly chilled in iced brine and kept as cold as possible throughout the period of curing. A 75° pickle, which contains 4½ gallons of water, is probably

the safest for use at this time of year. The meat should be used promptly. This is an excellent way to save the meat of shotes that have been injured.

DRY METHOD

For dry-curing hams and shoulders, there are many different recipes that call for varying quantities of salt. Five pounds is generally sufficient if one is sure that all the salt will be absorbed by the meat. However, since some salt ordinarily falls off or drains away, 6 to 8 pounds is a safer quantity. In the South, where temperatures are often high, the 8 pounds of salt is probably better. More than this quantity should not be used as it may injure the flavor and make the lean muscle too hard.

Meat is likely to spoil, regardless of the quantity of salt applied, if the freshly slaughtered carcass and the curing meat are held at too high temperatures.

The following curing mixture is recommended for 100 pounds of trimmed pork: Six to 8 pounds of salt, 1½ to 2 pounds of sugar, and 2 ounces of saltpeter. This is the well known 8–2–2 recipe and is the same as that used in making the brine cure.

Mix the ingredients thoroughly in a pan and divide into two equal parts by weight. Use one part for the first rubbing; use one-half of the other for overhauling the meat on the third day, and the other half for overhauling on the tenth day. In giving the first rubbing, sprinkle a little of the mixture in the bottom of the barrel. Put each ham or shoulder into the pan of curing mixture and rub it thoroughly. Force some salt into the hock and along the cut face of the butt, taking care not to injure the hand on the butt bone. Cover the face of the cut with the mixture and lay the piece carefully in place. Repeat the same process in overhauling. The pieces at the top of the orginal pack should be at the bottom when the meat is resalted.

The same curing mixture, with salt reduced to 5 pounds, will dry-cure 100 pounds of bacon. Overhauling on the third day will be sufficient.

Two days per pound is the standard curing time for the dry method. However, it is usually safer to keep 8 to 10 pound hams in the curing mixture for from 25 to 30 days. Farmers who wish to store this meat for summer use often remove the cuts at full time, string them, and allow them to hang at air temperature for about two weeks before smoking.

Fat backs and shoulder plates may be cured by either the dry or brine method. They are usually left in cure until used.

PICKLING PIGS' FEET

Special care must be taken to clean the feet thoroughly. The toes and dewclaws should have been removed when the carcass was dressed. The glandular tissue between the toes should be trimmed out and all hair and dirt removed. Unless they are cared for properly, feet begin to spoil about as quickly as any part of the carcass; therefore, after thorough chilling they should be put in cure at once. The clean, chilled feet are usually put in the ham pickle for from 15 days to 3 weeks and then cooked or simmered slowly until

tender. Cook them slowly enough so that the skin will not part too badly and the feet pull out of shape. The cured, cooked feet are then thoroughly chilled and packed in cold, moderately strong (35 grain) vinegar to which spices such as bay leaves or allspice may be added. The feet may be used at once or kept in the vinegar for three weeks or even longer.

Souse is made by cooking cured or uncured feet in a little water until the meat slips from the bones. The meat and strained soup in which the feet were cooked are then seasoned with vinegar and spice, brought to a good boil, put in molds, and allowed to jell. Additional cooked pork trimmings may be added.

FIGURE 25.—Stringing a cured ham for smoking

SMOKING CURED MEAT

Smoked, cured meat will have a brighter color and a milder flavor if it is freshened in cold water before being smoked. Hams and shoulders are soaked about 2 hours and bacon about 30 minutes. Most farmers do not soak the hams and shoulders that are to be stored for summer use.

All pieces to be smoked should be strung and scrubbed with warm water to remove the excess salt and grease. Hams and shoulders should be strung through the shank. Unless a regular stringing needle is at hand make an opening through the shank with the narrow blade of the boning knife and pull a stout string through with a wire hook. (Fig. 25.) A wooden or wire skewer is usually run

through the flank end of the bacon strip and the string inserted just below it. (Cover page.) This keeps the piece square while it is hanging in smoke.

It is usually best to hang the cured, washed meat in the smokehouse overnight to drain and dry. Start the fire in the morning. If the meat is still dripping when smoking begins the lower pieces will be streaked. Hang the meat so that no two pieces touch.

Cured pork may be smoked at a temperature of 100° to 120° F. The ventilators should be left open, especially at first, to permit the moisture to escape. A heavy fog of smoke is unnecessary. Continue the smoking until the meat has the desired color. Two days should give it a rich mahogany brown.

FIGURE 26.—Temporary smokehouse. A covered trench, as shown, or a few lengths of stovepipe, connect the fire pit and the barrel

Meat that is to be aged or held for summer use is usually smoked more slowly. The temperature is held at 70° to 90° F. and the fires rebuilt intermittently over a period of from one to several weeks. This is as much a drying as a smoking process and is believed to assist in preserving the meat and in the normal development of the pungent flavor characteristic of smoked pork that has been aged several months.

Smokehouse construction may vary from the barrel type (fig. 26) to the elaborate 6 or 7 story buildings used by commercial plants, but the general design of all is the same. There is a damper at the bottom to regulate the draft on the fire, enough distance from fire to meat to protect the meat from scorching, and a damper in the roof to permit the escape of evaporated moisture and to control the passage of the smoke past the meat. A distance of 10 feet between meat and fire is safe. If the distance is only 5 or 6 feet, an inverted tub or metal shield should be placed above the fire to deflect the direct heat. A tight, preferably fireproof building, 6 feet wide, 6 feet long,

and 8 feet high, is a common type. Almost all cement or building-tile companies will supply plans for smokehouses, giving detailed directions for construction.

Green hickory wood and sawdust are the standard fuels for smoking meat, but almost any hardwood such as oak, apple, maple, or ash will be satisfactory. Where timber is scarce corncobs may be used. Any resinous wood will blacken the meat and give it an undesirable flavor. If paper or pine shavings are used to kindle the green hardwood, be sure that all have been completely burned or removed from the fire before the smokehouse door is closed.

A fire built after the Indian fashion, with the sticks radiating from the center like the spokes of a wheel, will become lower and cooler as it burns. Building such a fire is a good precaution, for inattention to a hot fire has ruined the meat in many a smokehouse. Green sawdust may be used to deaden the blaze.

Under the provisions of the Federal meat inspection act the use of liquid smoke, smoked salt, and like preparations intended to be applied to meat instead of smoking them, is prohibited.

TESTING SMOKED MEATS

Sourness in smoked pork can often be detected when the warm meat is removed from the smokehouse, and often a taint will be noticeable a week or two after smoking, but most of the meat that has safely reached this stage may be considered sound. A ham trier may be used to test each piece. This instrument resembles a narrow 10-inch harness awl. A length of stiff wire sharpened at one end may also be used. This trier is run along the bone to the center of the ham from both hock and loin ends. If the trier brings out a sweet, smoky odor, the meat is sound. If upon withdrawal the trier carries an unpleasant odor, the piece should be cut open and examined carefully for spoilage. If there is a definite odor of putrefaction, it is best to destroy the entire piece. Shoulders are tried in the shank, at the shoulder point, and under the bladebone.

WRAPPING AND STORING SMOKED MEATS

After the smoked meat has cooled it is ready to be wrapped and stored. Many farmers rub pepper on the meat at this time to add flavor. Ground black pepper, with or without a little red pepper, may be used. The meat is then well covered with parchment paper and put into muslin bags. The paper wrapping should be heavy enough to keep the grease from soaking the bottom of the bag. The tops of the bags should be folded over and tied securely, a loop for hanging the meat being made in the outside tie string. Each sack may be further protected by being painted with yellow wash, and then hung up for future use. In preparing the yellow wash, for 100 pounds of hams or bacon use the following: Three pounds of barium sulphate, 1¼ ounces of yellow ocher, 1 ounce of glue (dry), and 6 ounces of flour.

Fill a pail half full of water and mix in the flour, breaking up all lumps thoroughly. Mix the ocher in a quart of water in a separate vessel, add the glue, and pour them into the flour-and-water mixture. Bring this mixture to a boil and add the barium sulphate

slowly, stirring constantly. Make the wash the day before it is required. Stir it frequently while using it and apply it with a brush. Lime, clay, flour, or a similar substance mixed with water to a rather thick consistency, may also be used to paint the bags.

The date for killing and curing should be so planned that the smoked meat can be bagged or put in an insect-proof place before the flies appear in the spring.

If the meat has been properly cured and smoked it should store satisfactorily in a dry, dark, cool, well-ventilated place. Many farmers keep their hams and shoulders a year or longer until they have developed the pungent flavor characteristic of stored smoked pork.

In humid climates mold may develop very rapidly on the meat but usually can be rubbed or trimmed off without serious loss. Meat should be closely watched for evidence of mold penetration into the body of the meat. Once the mold works in between the muscles it injures the flavor of the meat.

The shrinkage of dry-cured hams and shoulders, just after being smoked, will range from about 8 to 15 per cent of their fresh weight, and of brine-cured hams and shoulders, from 3 to 8 per cent. At the end of 12 months' storage the shrinkage of either may reach 20 to 30 per cent.

Bacon is usually more palatable when freshly cured and smoked. It does not store so well as hams and shoulders, and most farmers prefer to use it during the spring and early summer.

RENDERING LARD

Ordinarily the leaf fat, back fat, and fat trimmings are cooked together. The caul and ruffle fats from the offal yield a darker product than the other fats. If the offal fat has been removed carefully and washed and chilled promptly, it should have an acceptable odor and flavor.

Lard will render more rapidly and completely if it is cut into small pieces before being put into the kettle. Many persons prefer to grind it. The kettle should not be too full or it may boil over. From one-fourth to one-half pound of baking soda added to 500 pounds of fat when rendering is begun will darken the cracklings but whiten the lard. To prevent sticking and scorching, the fat should be stirred frequently and the fire should be watched during the entire cooking process.

Cooking should be very slow until the fat has begun to melt and the mass can be stirred freely in the kettle. At the beginning of the process, the temperature of rendering lard will be about 212° F. As the water contained in the fat tissues evaporates the temperature will rise slowly until it reaches 240° or 255°, which is as high as it should be allowed to go.

As rendering proceeds the cracklings will brown and float. When they are more nearly completely rendered they will gradually sink to the bottom. Care should be taken at this time to prevent small particles of dried-out cracklings from scorching on the bottom of the kettle. Many persons stop the cooking when the cracklings are still floating. The more nearly complete rendering, however, removes a greater proportion of the moisture, thus producing lard that will be more likely to keep.

It is advisable to allow the rendered lard to settle and cool slightly before emptying the kettle. The liquid lard may be siphoned or dipped carefully into containers. The rest of the lard, containing the cracklings, is usually put through a lard press, the lard being strained through a screen covered with two or three thicknesses of cheesecloth. If the hot lard can be put into 5 or 10 pound containers and stored immediately at temperatures near or below freezing, it will chill rapidly enough to produce a fine grain.

Leaf fat will yield from 90 to 93 per cent of its weight in rendered lard; a combination of leaf fat, back fat, and cutting fat, from 80 to 85 per cent; and offal fat, from 55 to 65 per cent. Well-pressed, skinned cracklings from an average kettle will constitute 4 to 6 per cent of the original weight of the fat.

STORING LARD

Air and light may cause a chemical change in stored lard which results in rancidity. For this reason the containers should be filled as nearly to the top as possible, sealed with a tight cover, and stored in a dark, cool place. Once the lard has become rancid it is impossible to improve it.

If the moisture has been eliminated from the lard by a thorough rendering, no water-souring should develop during storage.

MAKING SAUSAGE AND RELATED PRODUCTS

Sausage may be made one of the most desirable and appetizing of all pork products. Often the shoulder, bacon strip, and even the loin and hams are made into sausage along with the trimmings. There are many kinds of sausage, for each of which the seasoning may be varied to suit the individual taste. The few recipes included here are offered mainly as a guide. Desirable sausage can be made only from sound, high-quality materials. Care and accuracy in proportioning the ingredients are also essential.

The sausage grinder should be equipped with two combs or plates, having ½ and ⅛ inch holes respectively. A small hand stuffer will be convenient.

Some sausage, such as fresh pork sausage and headcheese, may be used without being stuffed, but those similar to liver sausage and Bologna-style sausage should be stuffed in casings. Bundles or sets of salted casings may be purchased from almost any butcher. Several types of manufactured casings are also on the market. Muslin casings about 2 inches in diameter may be made by stitching together the sides and one end of a muslin strip 6 inches wide. The muslin casing should be moistened in water before being used and the salted casings soaked for several minutes in warm water and then flushed out. Sausage stuffed in muslin casings is frequently paraffined after it has been chilled.

In stuffing, force enough sausage into the stuffer attachment to fill it. Slip as much soaked casing over the attachment as it will hold. If muslin casing is used, pull the closed end of the casing up tightly against the end of the stuffing tube. These precautions prevent the formation of air pockets in the sausage.

XUM

The operator supports the casing at the end of the stuffer with the first finger of his left hand while he turns the crank with his right hand. Pressing upward with the left forefinger and raising the stuffed casing above the end of the stuffer will pack the casing more tightly, thereby keeping out air pockets. Animal casings are cut after the proper-sized ring or length has been stuffed and a new length is then begun.

To tie the casings, drive a 10-penny nail into the far corner of the table and fasten to it one end of a stout, soft, white string 3 feet long. Grasp both cut ends of the casing, for example, a ring of liver sausage, in the left hand and tie them together with two half hitches of the string. Tie the first ring near the nail and each succeeding one a little farther down the string. When the string is full, cut it free and attach a new one.

FRESH SAUSAGE

The fresh trimmings from which pork sausage is made should be about one-third fat and two-thirds lean. If more fat is included, the sausage may be too rich and will have a large cooking loss. Less fat will make the cooked patties rather hard and dry and difficult to brown.

In making a small quantity of sausage to test the recipe, the following measurements may be used:

4 pounds trimmings.
5 level teaspoons salt.
4 level teaspoons ground sage.
3 level teaspoons ground pepper.
½ level teaspoon ground cloves or
1 level teaspoon ground nutmeg (if desired).
1 teaspoon sugar.

For 100 pounds of trimmings use the following:

1¾ pounds salt.
2 to 4 ounces ground sage.
2 to 4 ounces ground pepper.
½ to 1 ounce red pepper (if desired).
½ to 1 ounce ground cloves, or
1 ounce ground nutmeg (if desired).
12 ounces of sugar may also be included if the sausage is to be used reasonably soon.

The seasoning should be well mixed, spread over the trimmings, and the whole quantity ground through the fine plate. Some persons prefer to grind the unseasoned meat through a plate with ½-inch holes and then mix it with the spices and regrind through a plate with ⅛-inch holes.

If the sausage is to be put into casings it should be stuffed immediately after grinding. It should then be soft enough to pack tightly in the casings without the addition of cold water. It may also be fried down or canned.

To make bulk sausage that will slice and fry without crumbling, add a scant half cup of cold water to each 4 pounds of ground seasoned sausage and knead with the hands until the meat becomes very sticky and doughlike. Pack tightly in small molds or pans and allow it to chill before slicing it.

SMOKED SAUSAGE

Use pork sausage made with 2 pounds of salt, instead of 1¾ pounds, per 100 pounds of trimmings. If it is too stiff to stuff properly, add from 3 to 5 per cent of cold water and knead until the mass becomes doughlike. Stuff tightly in casings and allow it to cure for about 24 hours in a cool place. Smoke and dry at a temperature of 70° to 90° F. for a day or two until a dark mahogany color is obtained. This sausage should not be kept until hot weather unless it is canned.

BOLOGNA-STYLE SAUSAGE

Bologna-style sausage consists of ground pork and beef mixed with enough water to give the sausage the desirable fine, tenacious texture. Commercial concerns grind warm beef from freshly slaughtered cattle with cracked ice because this method gives a still finer grain to the finished product.

One standard recipe for Bologna-style sausage is as follows:

60 pounds beef.
40 pounds pork trimmings.
20 pounds cold water.
2 to 2½ pounds salt.
2 to 4 ounces black pepper.
1 to 1½ ounces coriander.
1 ounce mace.
Onions (if desired).

Grind the chilled beef trimmings with salt at the rate of 2 pounds per 100 pounds of beef. Use the coarse grinding plate, and allow the meat to cure in a cool place for about 48 hours. Salt, in the same proportion, is added to the coarsely ground pork the next evening and the pork is allowed to cure overnight. Many persons do not cure the pork.

Regrind the cured beef, using the plate with ⅛-inch holes. Then add the pork and grind the mixture again. If the pork was not cured add the salt (13 ounces for 40 pounds) before grinding. Add the spices and the water and stir or mix vigorously until the whole mass has become sticky. Thirty minutes is often needed to mix this sausage properly.

Stuff the sausage tightly into beef or muslin casings and allow it to hang in a cool place until the next morning. Put it in a well-ventilated smokehouse heated to 110° to 120° F. Protect the casings from a direct blaze that might scorch them. The sausage should take on a rich mahogany brown in about two hours' smoking.

Put the hot, freshly-smoked sausage immediately into water heated to 160° to 175° F., and cook it until it squeaks when the pressure of the thumb and finger on the casings is suddenly released. The usual cooking time for sausage stuffed in beef "rounds" is 15 to 30 minutes, for larger casings 60 to 90 minutes. Plunge the cooked sausage into cold water and chill it. Hang it in a cool place.

COOKED PRODUCTS

Cooking is a convenient means of preparing the edible parts of cuts that are difficult to bone, such as the head, feet, and tail. It is also a means of utilizing miscellaneous pieces of trimmings, liver, heart, tongue, skin, and the soup in which the meat has been cooked.

XUM

All meat should be well trimmed and washed before being cooked. The teeth, nasal passages, eyes, and eardrums should be removed. If the lips, snout, and ears have been well cleaned, they may be included. The jowl is usually cut off and cured. It may be added, but will often cause the headcheese and scrapple to be too greasy.

The feet should be well shaved and cleaned and the glandular tissue between the toes trimmed out. If the lard fat has been skinned, the clean strips of skin add gelatin (binder) and flavor to the sausage.

HEADCHEESE

Headcheese is the most simply made of the cooked sausages. Make deep cuts in the jowls or other thick pieces of meat, cover with water, and simmer until the meat is well done and slips easily from the bones. The skin, if used, should be cooked in a net or sack so that it may be removed when so tender that a finger can be pushed through it. The thick ears and snouts will require longer cooking than the other skin. The skin is ground with the plate having ⅛-inch holes. The jowls and other pieces are boned after being cooked. These, with the boneless pieces such as the heart, are ground with a plate that has ½-inch holes. Some persons prefer to cut the tongue and some of the larger pieces of fat into strips instead of grinding them.

The finely ground skin and coarsely ground pieces are then mixed with enough of the soup—the water in which the meat was cooked—to make the mass soft without being sloppy. This mixture is returned to the kettle and brought to a good boil. This reheating serves to mix the gelatin thoroughly through the soup so that when the headcheese is poured into shallow pans and chilled it will slice without crumbling.

Seasoning is added at the beginning of the second cooking. Usually it is safe to season to taste though the following quantities of seasoning per 100 pounds of cooked meat, including the added soup, are a satisfactory guide:

2 to 2½ pounds salt.
3 to 5 ounces black pepper.
¼ to 1 ounce red pepper (if desired).
1 ounce ground cloves (if desired).
1 ounce coriander (if desired).
2 ounces sweet marjoram (if desired).

If headcheese is stuffed into casings, it should be seasoned and stuffed before the second cooking. The stuffed headcheese should then be replaced in the remaining soup and simmered until it floats. This will require from 10 to 30 minutes. It is then chilled in cold water and stored in a clean, cool place.

Headcheese is usually eaten cold, sometimes with vinegar.

LIVER SAUSAGE

Cook heads, tongues, skins, hearts, and other pieces as for headcheese, but for a shorter period. Remove from the fire when the cuts can be boned. Scald the livers last. If they are deeply cut

with a knife they should be sufficiently seared in about 10 minutes. Liver adds a definite flavor to this sausage; 10 to 20 per cent of liver, by weight, is usually added to the other cooked products.

Grind all the cooked materials moderately fine and add about one-fifth as much soup by weight, using enough soup to make the mixture soft but not sloppy. Season to taste and mix thoroughly. The following are standard quantities of seasonings for 100 pounds of the mixture:

2 to 2½ pounds salt.
2 to 4 ounces black pepper.
1 to 3 ounces sage (if desired).
¼ to 1 ounce red pepper (if desired).
1 to 2 ounces allspice (if desired).

The seasoned, well-mixed sausage is usually stuffed in beef casings and simmered in water until it floats; usually the time required is 10 to 30 minutes. After being cooked, the sausage is plunged into cold water, chilled for at least 30 minutes, and hung up to drain.

If the meat is cooked too much in the first kettle, the second cooking, after the sausage has been stuffed, will destroy the tight "live" texture of the finished sausage.

SCRAPPLE

Scrapple, an especially favored breakfast dish in many sections, is composed of cooked pork and soup thickened with corn meal, flour, and sometimes shorts.

Cook the heads, hearts, and trimmings as for liver sausage, or until the bones can be removed. Cook the skin, if used, until tender. Grind all the material through the fine plate. Return all the ground material to the soup after it has been strained to remove the bones, and bring it to a boil.

The cereal mixture to be added may vary widely. One consisting of 7 parts corn meal and 3 parts white or buckwheat flour or 7 parts corn meal, 2 parts shorts, and 1 part buckwheat flour, should be acceptable.

Four parts ground cooked meat products, 3 parts soup, and 1 part dry cereal mixture (by weight) will produce a richly flavored, satisfactory scrapple. More meal and soup may be used if desired.

In adding the cereal mixture, moisten it with some of the cooled soup so that it may be added to the hot soup without forming lumps. Boil it for about one-half hour, stirring it frequently or constantly to prevent sticking. Add the seasoning shortly before the cooking is finished and stir it in well.

The following seasonings may be used for 100 pounds of scrapple, including the soup and the dry cereal mixture:

2 to 2½ pounds salt.
2 to 4 ounces black pepper.
2 to 4 ounces sweet marjoram.
2 to 4 ounces sage (if desired).
1 ounce red pepper (if desired).
1 ounce nutmeg (if desired).
½ ounce mace (if desired).
2 pounds ground onions during second cooking (if desired).

XUM

The hot scrapple is poured into small shallow pans and chilled as quickly as possible. If properly made it can be sliced and fried quickly without much crumbling. The slices may be dipped in egg before they are fried.

PANHAS

The soup remaining after the making of headcheese or liver sausage may be used to make a kind of corn-meal mush called "Panhas." Strain out all bones, bring the soup to a boil, and add the meal slowly. A safe method of preventing the formation of lumps is to moisten the meal beforehand with a little cooled soup, adding enough of the liquor to make a thick paste.

Three or four parts of soup to one part of meal, by volume, is a good proportion. Season to taste with the seasonings given for headcheese. Cook the meal 30 to 45 minutes and pour it into shallow pans to cool. Slice and serve like scrapple.

CANNING PORK

Pork should be canned in a steam-pressure cooker at a pressure of 15 pounds (250° F). Water-bath, live-steam, oven, and open-kettle methods of canning will produce a temperature of only about 212° F., which is too low to sterilize meat thoroughly.

Use only meat which is fresh and in good condition. Wipe the meat with a damp cloth, and remove the excess fat and the bones. Cut into pieces of suitable size to be placed in the containers to be used. Heat the meat thoroughly, until it is no longer red, by simmering it in water or by placing it in an oven. Pack it into the containers while it is hot, and work rapidly. Pour enough liquid over the meat to fill the container within one-half inch of the top; use the broth in which the meat had simmered, or the pan drippings, if they are not dark brown, diluted with boiling water. Add salt as desired (about 1 teaspoon per pint). Completely seal tin cans at once or partly seal glass jars, and place them in the pressure cooker immediately, before the meat is cooled. Process at 15 pounds' pressure as follows:

	Minutes
Pint glass jars	60
No. 2 plain tin cans	50
No. 2½ and No. 3 plain tin cans	60

When using No. 2 and No. 2½ tin cans, open the petcock on the pressure cooker as soon as the processing period is over and allow the steam to escape. Open the cooker and place the cans in cold water. Use running water if it is available; otherwise change the water frequently until the cans have cooled.

When using No. 3 tin cans or pint glass jars, allow the steam gauge to come to zero before opening the petcock. Then open it gradually to prevent a sudden outrush of steam. Too rapid lowering of pressure surrounding the jars will draw the liquid out of the jars.[3]

[3] General information on the preservation of food by canning and details of processing food in the pressure cooker are given in Farmers' Bulletin 1471, Canning Fruits and Vegetables at Home. This bulletin should be used to supplement the directions given. More detailed directions for the canning of pork may be obtained from the Bureau of Home Economics, U. S. Department of Agriculture.

REGULATIONS FOR SHIPPING MEAT OR MEAT FOOD PRODUCTS

Farmers who ship their meats must comply with official State and Federal regulations. Below is shown a sample shipper's certificate such as must be used in interstate shipments of uninspected meat or meat food products which are from animals slaughtered by the farmer on the farm. Blank certificates should follow this sample. In size the certificate should be 5½ by 8 inches.

SHIPPER'S CERTIFICATE

*Date*_____, 19__.

Name of carrier_____

Shipper_____

Point of shipment_____

Consignee_____

Destination_____

I hereby certify that the following-described uninspected meat or meat food products are from animals slaughtered by a farmer on the farm, and are offered for transportation in interstate or foreign commerce as exempted from inspection according to the act of Congress of June 30, 1906, and at this date they are sound, healthful, wholesome, and fit for human food, and contain no preservative or coloring matter or other substance prohibited by the regulations of the Secretary of Agriculture governing meat inspection.

Amount and weight.

Kind of product_____

_____
(Signature of shipper)

_____
(Address of shipper)

Two copies of this form are to be presented to the common carrier with each shipment.

COOK PORK THOROUGHLY

THROUGH eating raw pork man may become infected with a very serious disease called trichinosis. The lean meat of hogs may harbor parasites called trichinae which are too small to be seen with the naked eye. The danger of trichinosis can be entirely avoided by thoroughly cooking the pork. Certain pork products, however, that are intended to be eaten without cooking may be considered safe if they bear evidence of Government inspection or equally competent State or local inspection.

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PORK ON THE FARM

Killing, Curing, and Canning

FARMERS' BULLETIN NO. 1186
U. S. DEPARTMENT OF AGRICULTURE

WARM, freshly slaughtered pork carcasses should be chilled to a temperature between 34° and 40° F. within 48 hours, preferably within 24 hours, after slaughtering. Bacteria which may cause spoilage if their growth is not promptly checked by chilling are often present in the meat.

Meat as it cures will normally develop a more uniform, desirable flavor if it can be held at an even temperature of about 38° F. On the farm, temperatures are not easily controlled, but every effort should be made to approximate those mentioned.

Proper slaughtering equipment will make it possible to clean hog carcasses thoroughly so that full use can be made of all the parts, including the head and feet.

Sausage, scrapple, headcheese, and similar products afford means of utilizing certain parts of a hog carcass that might otherwise be wasted.

Clean, well-cut, smoothly trimmed meat can be cooked and used to better advantage than pieces that have been soiled or improperly prepared.

Washington, D. C.

Issued February 1921
Revised October 1938

PORK ON THE FARM

Killing, Curing, and Canning[1]

By K. F. WARNER, *senior extension meat specialist, Animal Husbandry Division, Bureau of Animal Industry*

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IMPORTANCE OF PROPER METHODS

SINCE FRESH MEAT is highly perishable, proper handling is necessary to make it into sound and palatable products that will keep satisfactorily. Only through the elimination of waste and spoilage can the advantages of dressing hogs on the farm be realized. Success in preparing meat depends upon strict attention to the methods used. None of the details of these methods are difficult, but all are important.

There are many different ways in which to prepare pork products. The most desirable one for each farmer is that which best suits his family or locality. However, certain general rules for cutting and curing should be observed by all.

EQUIPMENT

Elaborate and expensive equipment is unnecessary, but certain tools are essential and others are very desirable (fig. 1). Most useful of all is the curved 6-inch skinning knife. It may be used for sticking the hogs, raising the gambrel tendons, shaving and dressing the carcass, and cutting and trimming the meat. It is also the best knife for skinning cattle and lambs. Once the user becomes ac-

[1] This is a revision of a previous edition written by F. G. Ashbrook, junior animal husbandman, and G. A. Anthony, lay inspector, Bureau of Animal Industry, and Frants P. Lund, Division of Cooperative Extension.

customed to its shape, the curved knife will be found to cut more easily and smoothly than the straight butcher knife. A narrow-bladed boning knife, the narrower the better, is needed in preparing boneless roasts and boning meat that is to be made into sausage or canned.

In sharpening a knife a grindstone commonly is used first. With it an even bevel, about one-fourth inch wide, is put on each side of the blade. An oilstone is used to give a smooth, keen edge. A smooth, high-quality, 9- to 14-inch steel is used to keep a sharp knife in good cutting condition. A smooth steel straightens the edge of a sharp knife or removes the "set" from the microscopic teeth that compose the edge. When they are purchased, most steels, even those of high quality, are too rough to be serviceable and should be rubbed down with an emery stone until the surface is smooth and glassy. One can form the habit of steeling the knife briefly but frequently while using it.

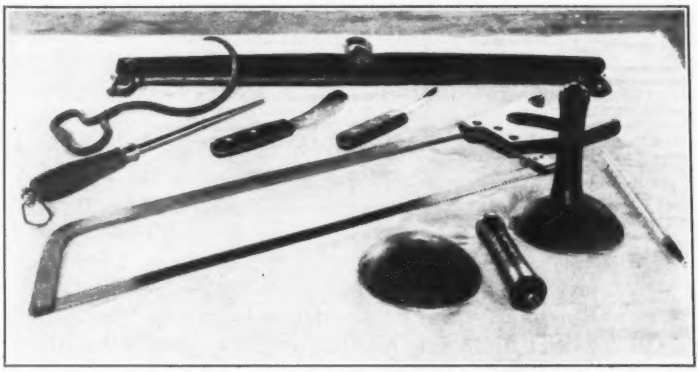

FIGURE 1.—Equipment for use in slaughtering and dressing hogs: Gambrel (singletree), hook, smooth steel, skinning knife, boning knife, saw, bell-shaped hog scrapers, and thermometer.

The meat saw should be 24 to 28 inches long. A saw of this length can be used instead of a cleaver for splitting either hog or cattle carcasses. The bell-shaped hog scrapers are the best hand instruments yet devised for removing the hair, scurf, and dirt. A fairly heavy steel scraper, with a bell that will take a rough edge on the outside when rubbed with an emery stone or file, is the most efficient. A scraper 4 inches in diameter can be used more easily than larger sizes, whereas smaller scrapers are usually too light and do not hold their shape. A clean singletree with open hooks makes a more desirable gambrel for hanging the carcass than the customary notched stick as there is less danger of the carcass slipping off the singletree. When many hogs are to be killed, the use of commercial metal gambrels is suggested.

A 50-gallon hardwood or metal barrel will serve to scald a hog weighing up to 250 pounds, without much difficulty. A metal trough or watering tank 5 to 6 feet long, 30 inches wide, and 15 to 24 inches deep may be converted into a combination water heater and scalding vat. It is set up on bricks or put over a trench. The sides are banked with earth and a fire built beneath (fig. 2). This arrange-

ment permits holding the temperature of the water at the proper point for scalding any number of hogs.

The most convenient scraping table is 4½ feet wide, 2½ feet high, and 4 to 8 feet long (fig. 2). On a table of this width the hog can be laid crosswise so that one man may scrape the rear end while the other scrapes the head. A thermometer that will register up to 212° F. is desirable so that the temperature of the water can be correctly gaged.

A hog or hay hook for use in scalding the animal; pans or tubs for holding edible and inedible viscera; a block and tackle, ladder, rack, or other means for suspending and chilling all the carcasses that are to be dressed; and plenty of hot and cold water should be provided before operations begin. A small blowtorch and wire brush will help materially in singeing and scrubbing the head and feet.

A salinometer (known also as a salimeter), operating on the same principle as the wet-battery hydrometer, may be used in measuring

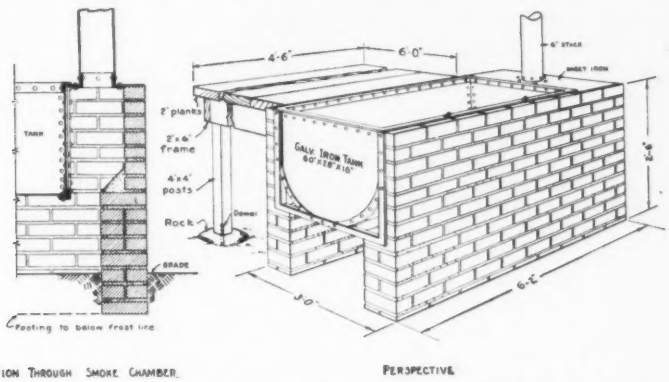

FIGURE 2.—Combination water heater, scalding vat, and scraping table. The tank may also be set on the ground over a trench and banked with sheet metal or earth.

accurately the saltiness of the curing brine. It is inexpensive, and may be obtained at any butcher's supply house.

MEDIUMWEIGHT HOGS MOST DESIRABLE FOR SLAUGHTER

A hog weighing from 180 to 225 pounds alive will produce moderate-sized cuts and usually a very desirable proportion of fat and lean. Heavier hogs will produce more lard.

When hams and shoulders are cut according to the methods later described, each will weigh about 7 percent of the live weight of the hog. Each bacon strip and loin will weigh about 5 percent and the head 7 percent. The weight of lard rendered from a 200-pound live hog will range between 9 and 13 percent of the live weight of the hog; and that from a 250- to 300-pound hog, between 14 and 18 percent.

A smooth, moderately well-finished hog will usually produce a desirable quality of meat. Of course the animal should be thrifty, and healthy and the meat suitable for human consumption.

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CARE OF THE HOG JUST BEFORE SLAUGHTER

The care of an animal just before it is slaughtered has much to do with getting a good "stick." This is very important because meat from a well-bled hog keeps better than that from a hog which has not bled well. A hog bleeds more thoroughly and dresses more easily after a 24-hour fast, but it should be given all the water it will drink. Running the animal or wrestling with it often causes a temporary fever. If the animal is killed in this condition, the meat is likely to be bloody, sometimes referred to as fiery. Such meat looks bad and spoils easily. Bruises and whip marks cause bloody spots, which must be trimmed out. Penning the animal by itself the day before butchering is recommended.

STICKING

Killing the hog should be done as humanely as possible and in a way that will insure a thorough drainage of the blood. Putting the hog in a small pen the day before will make it easier to stun or catch without exciting it. Stunning may be done by striking one sharp blow with the head of an ax or other heavy blunt instrument or by shooting at a point in the forehead midway between the eyes and slightly above. Improperly placed blows or bullets that do not stun can cause the animal much pain. If stunning is practiced as a humane measure, take care that the first attempt is successful. Since bullets sometimes glance from a hog's skull or miss, care should be taken to prevent injury to persons or to other livestock.

If the animal is stuck without being stunned, the blood will drain out more completely than if it is stunned first. Shackling a hog's hind leg with a chain or rope and hoisting it by a block and tackle fastened securely some 10 feet above the ground is the easiest way, for both man and hog, to restrain the animal for sticking without stunning. To get the hog in proper position for sticking on the ground, reach under the animal and grasp its opposite front leg, then roll it upon its back and hold it firmly by the front feet. The man holding the hog stands astride it, facing forward, with his feet and knees pressed against the shoulders of the animal to prevent it from rolling (fig. 3).

The following sticking method is recommended for the beginner. The man doing the sticking takes a position squarely in front of the hog, holds down the snout, and opens the skin for a distance of about 3 inches in front of the breastbone. He then inserts the knife, edge downward, straight in toward the breastbone, not downward as is often done. When the breastbone is reached, he follows downward with the point of the knife until the knife slips under the breastbone and between the ribs. He then pushes the knife in about 1 inch and directs the cut first downward toward the backbone, then forward toward the head (fig. 4). Care should be taken to hold the animal squarely on its back and to keep the knife in the center so as not to stick a shoulder. It is both difficult and unwise to stick the heart. Let it pump out the blood as long as possible.

XUM

FIGURE 3.—Sticking the hog. Note that the feet of the man holding the hog are pressed against the shoulders of the animal to prevent its rolling.

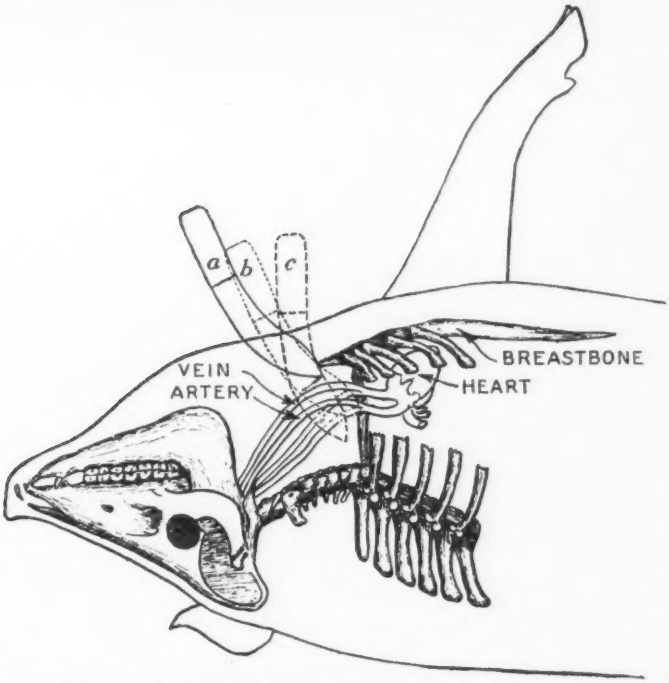

FIGURE 4.—The three positions of the knife in sticking a hog: *a*, The knife inserted in the fat; *b*, the second position places the knife above the artery; *c*, the final position, after the downward thrust has been made and the artery severed.

SCALDING

Slow scalding is usually best. At slaughterhouses where steam is available to maintain the scalding water at a steady temperature, the water is usually held at 140° to 144° F. With these temperatures it will take from 3 to 6 minutes to loosen the hair and scurf, but there is little or no danger of setting the hair or cooking the skin. In the fall of the year when the winter hair is beginning to grow and most

FIGURE 5.—Scalding the hog. Keeping it in motion lessens the danger of setting the hair and works the water into the wrinkles of the skin.

hogs are difficult to scald, temperatures as high as 146° to 150° are sometimes used.

On the farm, where it is difficult to reheat the water promptly, temperatures of 155° to 165° often must be used at the beginning so that the water will not become cold before the hog is completely cleaned. In using water as hot as this, care must be taken to keep the hog in motion (fig. 5) while in the water and to pull it from the barrel and give it frequent chances to cool. This lessens the danger of setting the hair. If possible, it is advisable to have plenty of boiling water available so that lower temperatures can be used at the beginning and more hot water added if necessary. The combina-

tion heater and scalding vat shown in figure 2 is the most convenient means for obtaining the proper temperature.

Lime, rosin, or other substance that will make the hair cling to the scraper and pull out more easily is often put into the water. The proper temperature of the water, however, is more important than any substance that can be put into it.

Twenty-five to thirty gallons of water is ordinarily enough to scald a hog in a 50-gallon barrel. Lightweight or mediumweight hogs can be practically immersed in the barrel. The animal is held with a hook in the lower jaw. In scalding large hogs the ham end of the animal is immersed first and then the head end. When the latter end is immersed, one leg of the hog is held with the hook caught in the gambrel tendon. At this time, a third man, if available, can remove most of the hair from the hot legs and flanks even though the animal is kept in motion.

FIGURE 6.—In scraping the carcass tilt the scraper on its far edge and pull forward. Use both hands and plenty of pressure.

SCRAPING

When the hog is completely scalded, turn it crosswise on the table. One man should grip the hind legs with both hands and twist off the hair, then pull off the dew claws and toes, while hot, with a hook, and scrape the hindquarters (fig. 6). Another should scrape the hair from the forequarters, feet, and head. After some experience, one will learn to stretch the skin by moving the leg or head so as to smooth the wrinkles and make scraping easier. If patches of hair have not been thoroughly scalded, it is often possible to loosen them by covering them with sacks or hog hair and pouring hot water on them. The dehairing of the hot carcass should be done as rapidly as possible as there is a tendency for the skin to "set" and render the removal of the hair difficult.

After the hair and scurf have been scraped off, much of the dirt can be removed by rinsing the carcass with warm water and pressing the bell scraper flat against the carcass instead of tipping it on its

edge as before (fig. 7). A blowtorch and wire brush will now be very useful in singeing and scrubbing the head and feet (fig. 8).

FIGURE 7.—To remove the dirt, press the scraper flat against the wet skin and move it rapidly back and forth. This creates a suction that will remove much dirt and stain.

The scraped, singed carcass is ready to be rinsed with cold water and shaved (fig. 9). Wash and shave the entire carcass. It is now ready to be hung up. To insert the gambrel, open the skin at the center of the hind leg just above the foot and directly over the tendons. Push the skin aside with the knife and cut down to the bone at the side of the tendons, as shown in figure 10. Make a similar cut on the other side of the tendons. Put the knife aside and raise the tendons with the fingers to receive the gambrel. Be sure the gambrel or hook engages both tendons. After the gambrel is raised and the carcass is suspended, wash the carcass again with cold water and shave it again.

REMOVAL OF INTERNAL ORGANS

Opening a hog carcass and removing the internal organs are really very simple operations, particularly if the animal has been kept off feed for 24 hours before slaughter. There are many different methods, but the following should be easily understood by the beginner.

FIGURE 8.—Cleaning the head. The head is scraped and singed and then scrubbed with the wire brush.

Insert the skinning knife, edge up, into the sticking place and cut up through the full length of the breastbone (fig. 11). If the breastbone is very hard to cut, as it may be in older hogs, the cut may be made a little to one side of the mid-

dle where there is softer bone or cartilage. It is sometimes necessary to use the saw. Care should be taken not to extend the opening incision upward beyond the chest cavity. To do so will cut into the stomach or allow the intestines and stomach to protrude and interfere with the operation to follow.

Now begin at the other end of the carcass and cut down between the hams, taking care to keep the knife in the center. As the hams open, the white membrane which marks the exact middle can be seen. Follow this, if possible, to the pelvic bone. If one misses the middle "seam," correction may be made by a small bony projection that can be felt with the finger just underneath the front (forward side) of the pelvis. If the knife is directly above this projection, there is usually little difficulty in separating the hams correctly. Use the saw if necessary to divide the

FIGURE 9.—In shaving the animal, stretching the ears, jowls, legs, and other parts will smooth out the wrinkles and make shaving easier.

FIGURE 10.—Raising the gambrel tendon.

pelvic bone. While dividing this bone care should be taken to avoid puncturing the urinary bladder which lies just below. In dressing a

barrow, loosen the penis and let it hang, to be removed later with the bung. Insert the handle of the knife in the opening made in splitting the hams, with the point of the knife pointing outward.

FIGURE 11.—In splitting the breastbone, if the handle of the knife is slanting up with the point down there is little danger of cutting up too far and opening the stomach.

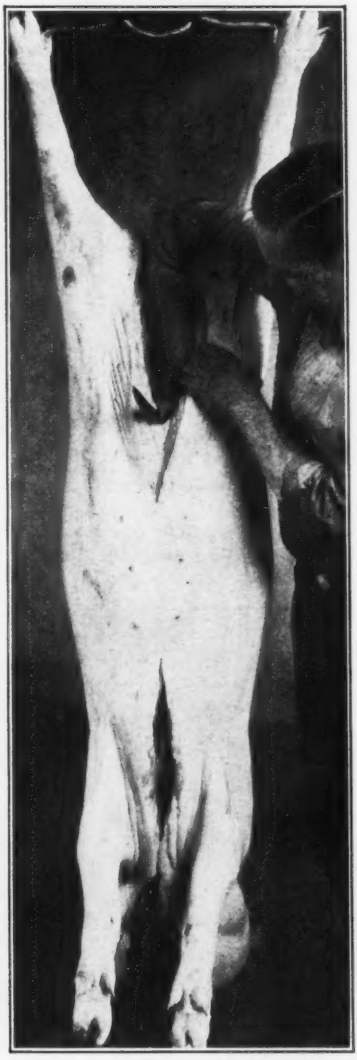

FIGURE 12.—Under this method of opening the carcass there is no danger of cutting the intestines or stomach.

Guard the heel of the blade with the forefinger and thumb of the right hand and cut down the median line of the belly until this cut joins the split breastbone (fig. 12).

Allow the intestines to roll out and hang by their natural attachments. Raise the bung by slipping the knife into the pelvic cavity and loosening the bung from the fat on both sides and at the back.

FIGURE 13.—The internal organs will not fall unless the animal was fed shortly before slaughter.

FIGURE 14.—In removing the intestines, grasp them carefully and firmly so they will not tear and fall.

Pull it down toward and past the kidneys. Be careful to cut it free from the kidney fat (fig. 13).

It is at this point that many inexperienced farm butchers expect to encounter trouble. The operation, however, is almost complete, and no difficulty need be anticipated. With the left hand grasp the

intestines firmly just below the kidneys at the point where they appear to be attached to the backbone. Push down slowly but firmly until they loosen from the back. Free the liver by running the fingers of the right hand behind it and pulling it away from the back. Still holding the intestines in the left hand, cut through the diaphragm to the backbone (fig. 14). Extend the cut around the white fibrous portion of the diaphragm, which is parallel to the ribs, to the breastbone and down the breastbone to the throat. This last cut loosens the heart and lungs in the chest cavity. Still holding the intestines with the left hand, repeat the cut on the left side of the carcass, crossing the right hand over the left. It may sometimes be necessary to cut the back artery from the backbone, thus permitting the left hand to pull the entire offal out of the carcass. The gullet is still attached to the throat, but one cut of the knife will free it.

FIGURE 15.—The warm leaf fat is pulled out by loosening it at the rib end and fisting it up and out.

The body cavity should be washed and rinsed in cold water before the carcass is split. Splitting with a saw down the center of the backbone is recommended. This eliminates the savory country-style backbone piece or chine but gives a larger quantity of meat suitable for curing and canning.

The split carcass will chill more rapidly if the leaf fat is pulled out by loosening it where it is attached to the diaphragm at the last rib and stripping or fisting it up and out (fig. 15). It is also much easier to remove the leaf fat when the carcass is hot than after it has been chilled.

In commercial practice, where carcasses are inspected, the head of the hog is unjointed before the carcass is opened. This operation requires a little skill but is readily learned. A cut is made about

one-half inch above the ear, at right angles to the backbone, and clear through the left jowl and top of the neck and throat. The left ear is held with the left hand, and the cut is made in to the backbone. This leaves the head hanging by the bone and right jowl. The cut should meet the neck joint where the first neck bone joins the head. The dished "button" end of the backbone fits over the head end of the joint in the same manner that the fingers and palm of one hand can be made to enclose the clenched fist of the other. The knife loosens the membranes at the lower or head end of the joint, the end of the "fingers" of the upper or enclosing "hand." As the joint opens, the knife moves upward along the "knuckles" of the clenched "fist," across its top, and down the far side. The whole joint is about 1½ inches wide. Packers often unjoint the head by cutting across above the ears, peeling off the jowls, and allowing them to remain upon the carcass.

CHILLING THE CARCASS

The tissues of many freshly slaughtered hog carcasses contain bacteria that are capable of spoiling the meat unless their growth is promptly checked. Packers have practically solved the problem of sour meat by chilling the fresh, warm carcass to a temperature of 34° to 36° F. within 24 hours after slaughter and by holding the meat at 36° to 40° while it is curing. On the farm, butchering should be done when the weather is as favorable as possible. When necessary protect the freshly slaughtered carcass from freezing by hanging it in a shed or wrapping it with a sheet; but storing the warm meat at high temperatures, particularly those above 40°, is often the cause of spoilage.

Unless care is taken the fat bellies and hams of warm, freshly slaughtered hogs often overlap each other during the cooling process, thus closing the body cavity to air circulation. Warm hogs, so hung, will frequently show spoilage the next day, even when held at low temperatures. Slight taint is often observed along the bacon strip when the hot, heavy, leaf fat is not removed. It is always wise to split warm hogs and to pull the leaf fat as soon as the internal organs have been removed.

Whole or half carcasses should be suspended to chill so that they do not touch. When hams touch each other, chilling is often delayed too long, and spoilage occurs. If warm carcasses are held at temperatures slightly above freezing overnight, the internal temperature of the hams will not always be below 40° F. the next morning. Cuts from such meat should be spread out during the second night to permit complete chilling. The need for prompt and thorough chilling of warm carcasses cannot be overemphasized.

Many communities in the South have access to local cold-storage plants with facilities both to chill the carcass and to store the curing meat. The warm sides are brought in immediately after slaughter, and the owner returns 1 or 2 days later to cut the pork and put the meat in cure in the drawer, box, or bin assigned to him. The fresh cuts, fat for rendering into lard, etc., are taken home. In some cases the cold-storage company does the cutting. When nights are fairly cool the hogs are often dressed in the afternoon and allowed to hang overnight. The meat is cut and trimmed the next

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morning and the curing pieces taken to cold storage. Where a community cooperates with a cold-storage plant, nominal charges to the farmers can often be obtained.

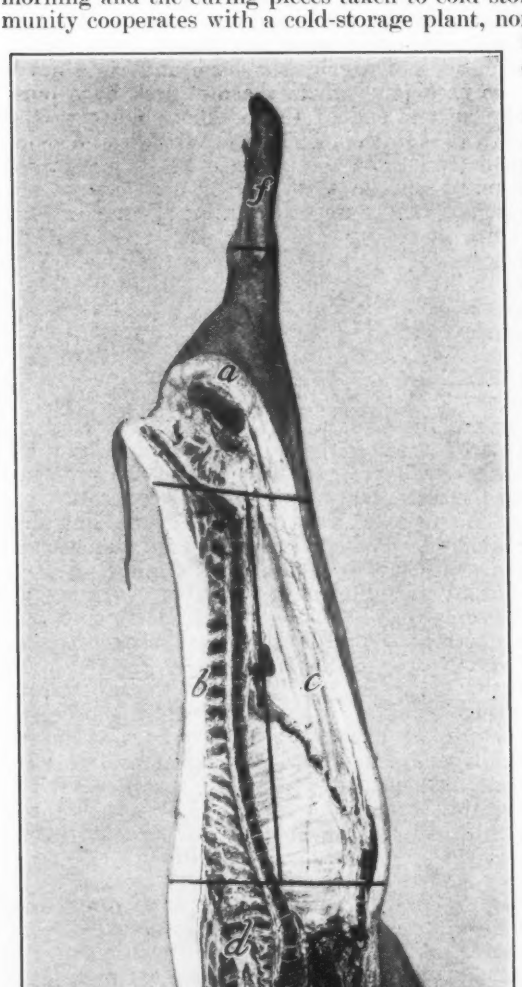

FIGURE 16.—Cuts of pork: *a*, Ham; *b*, loin; *c*, bacon strip; *d*, shoulder; *e*, head; *f*, feet.

If the weather becomes warm and no cold storage is available, the warm sides may be cut up and the individual pieces hung up to air and cool, or packed in cracked ice (1½ pounds of ice per pound of meat). Sometimes insufficiently cooled pieces are salted lightly with a dry-cure mixture and spread on a rack where they will have as much ventilation as possible. None of these methods are as safe or as satisfactory as storing the meat at the proper temperature, either natural or artificial.

CARE OF THE INTERNAL ORGANS

The liver should be cut free and the gall bladder removed. The small, upper end of the gall bladder can be lifted with the thumb and finger and the bladder peeled out. The heart is cut off through the auricles or "ears." The tongue is removed at its base. All three parts should be washed promptly in clean water. They may be chilled in cold water and hung up for further chilling and drying. The caul fat can be separated from the stomach with the

hands. The small intestines are removed or "run" from the ruffle fat by pulling the fat in one direction with the right hand and the intestines in the opposite direction with the left. The ruffle fat is then peeled off. This fat, if not fouled in dressing, should be saved for

FIGURE 17.—Removing the three-rib shoulder.

lard. It should be thoroughly washed and promptly chilled in cold water. After being chilled, it is hung up to drain and dry before being rendered.

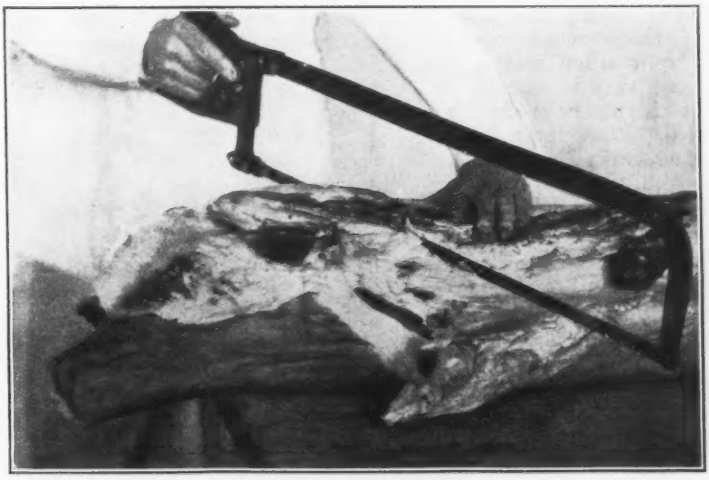

FIGURE 18.—In cutting off the square-top ham, saw at right angles to shank.

CUTTING THE CARCASS

There is no one best method of cutting a pork carcass. The choice depends on how the pork is to be used. If it is to be sold, the cuts should conform to local preferences. If the meat is to be preserved

FIGURE 19.—In sawing the loin from the bacon strip, cut and saw through the leaf lard if it was not pulled off when warm.

by freezing, each piece should be of a size and character suitable for convenient cooking. The purpose of the method described here is to produce the maximum quantity of meat that can be cured and stored for summer use and the minimum number of parts that must be used fresh (fig. 16). This cutting method separates the thick ham, loin, and shoulder from the thinner bacon strip, fat, and head.

If the head was not removed in dressing, lay the carcass on its side and cut off the head about one-half inch behind the ears. Cut to the bone and entirely around it. The head may then be twisted off at the neck joint.

If the carcass was not split when warm, it is an easy matter to split it after it has cooled. Place the cold carcass, with the head removed, upon its back with the hams extending beyond the table. Stand between the hams, and start the saw through the forward or shoulder end of the backbone. Saw from the inside toward the skin. As the shoulders are split, the two sides will spread apart, permitting more freedom in sawing the loin and last the hams.

A three-rib shoulder is removed by sawing between the third and fourth ribs parallel to

FIGURE 20.—Removing the back fat from the loin. One-fourth to one-half inch of back fat is usually left on the loin.

the head cut (figs. 16, *d*, and 17). A long ham is cut off just behind the rise in the pelvic arch and at right angles to the direction of the hind leg. The more popular short ham is cut through the second vertebra behind the rise. To make the desirable square-top ham, the saw should be at exact right angles to the shank (figs. 16, *a*, and 18).

Cut the thick loin (fig. 16, *b*) from the thin bacon strip (*c*) just below the curve in the backbone at the shoulder end and at the edge of the tenderloin muscle at the ham end. Lay the middle, skin side down, and saw across the ribs, as shown in figure 19. Remove the back fat from the loin by cutting down the side of the loin, as shown in figure 20, then raise the fat and loosen it down the center. There are three kinds of chops cut from the pork loin: Those from the shoulder end, the center cuts, and chops from the ham end. The whole muscle of the loin can be easily boned out for sausage or for canning. Unboned, it is suitable for chops and roasts. It may also be given a mild cure.

If the leaf fat is still on the bacon strip, cut it free along the rib end, loosen it by bending the bacon strip over the edge of the table, and then pull it out (fig. 21). In removing the spareribs the edge of the knife is kept against the ribs. This will leave most of the meat on the bacon strip (fig. 22).

The jowls may be cut from the head, trimmed, and cured. After the eyes, nasal passages, teeth, and incompletely cleaned parts of the ears and snout have been removed, the rest may be used with the liver, heart, and tongue for cooked products.

The lean in all trimmings should be saved for sausage. A proportion of two-thirds lean and one-third fat is the popular combination. Many persons prefer to remove the skin from the fat (fig. 23) before cooking the lard as the fat alone renders more satisfactorily. If the skin is clean, however, it need not be removed.

PICNICS AND SHOULDER BUTTS

The trimmed three-rib shoulder may be divided into a shoulder butt, a picnic (shoulder with much of the butt removed), and plate, if desired (fig. 24). The top third of the shoulder is cut off as the butt, the extra fat or plate being removed from the lean butt. This 2- to 4-pound butt makes a very acceptable fresh roast. If the butt is to be cured, the end of the shoulder blade is ordinarily removed and the boneless piece cured with the bacon. The plate may be cut up for lard or cured as salt pork with the fat back. The picnic or remaining shank end is trimmed or rounded evenly and cured with the hams and shoulders.

TRIMMING PORK CUTS

All meat to be cured should be trimmed smoothly and evenly. Care should be taken to remove all blood spots, to be looked for especially in the shoulder. The brisket and ragged neck pieces should be cut from the shoulder, the tail and flank from the ham, and the uneven edges from the bacon strip. Leave some fat as protection on the face or inside of the ham. Excess fat on hams and shoulders may be removed, though the pieces will store more satisfactorily in summer if not skinned. The bacon strip should be flattened out with the hands or with the side of a cleaver, and

FIGURE 21.—Bending the untrimmed bacon strip over the table edge to loosen the cold leaf fat.

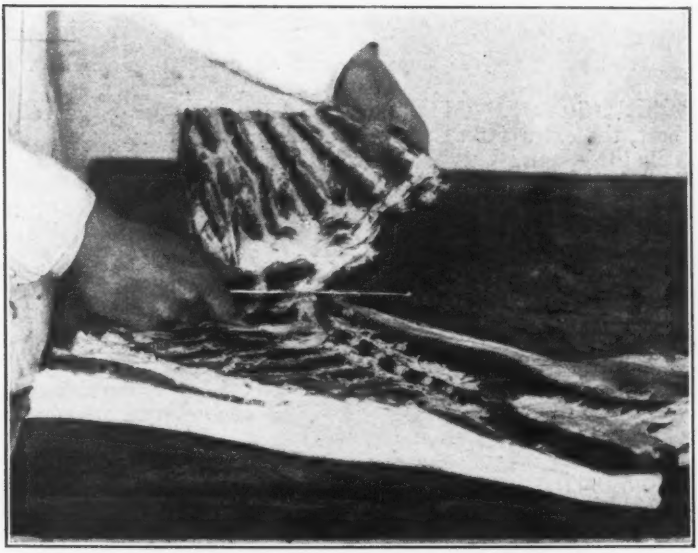

FIGURE 22.—Removing the spareribs from the bacon strip.

squared on all four sides. The jowls and fat backs, if these cuts are to be cured, should be treated in the same way. Spareribs and loins may be given a light cure without further trimming. Figure 25 shows the difference between poorly trimmed and properly trimmed hams, bacon, and shoulders.

FREEZING PORK

The widespread distribution of electric power and the development of so-called freezer-locker units (often referred to as refrigerated

FIGURE 23.—In skinning the fat trimmings, keep the knife parallel with the table and the edge turned slightly downward toward the skin.

lockers) have made subfreezing temperatures increasingly available to families interested in preserving farm-dressed pork. These units consist of individual compartments installed in a large room of a cold-storage plant. The compartments are made with wire-mesh sides or some material allowing free circulation of cold air. The doors of the compartments are fitted with locks so that each person may keep his products under lock and key.

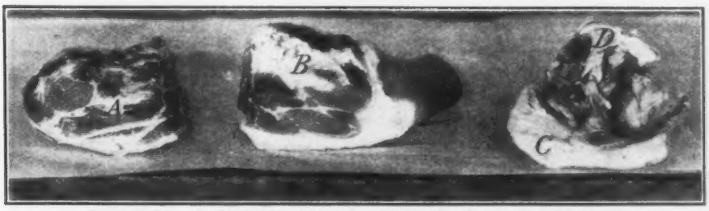

FIGURE 24.—A, Shoulder butt; B, picnic; C, plate; D, trimmings.

Freezing temperature is entirely practical for holding fresh pork though there are some definite limitations. The preserving effects of subfreezing temperatures include (1) killing or stopping the development of molds, yeasts, and bacteria, (2) reducing the activity of the enzymes, thus delaying autolysis or self-digestion, and (3) retarding chemical changes such as dehydration and oxidation. Although there is little microbial action under freezer storage, the development of undesirable textures, colors, odors, and flavors is common. These changes are attributed to the continuing action of the enzymes, evaporation of the surface ice, and other actions.

Ten degrees below 0° F. is generally accepted as the preferred temperature for the "sharp" freezing of meat products. Although 0° is the recommended level for storing frozen meat, 10° is often used and should be satisfactory if the lower one is not practical. Temperatures above 10° are, in general, too high. Much variation in temperature is undesirable.

Chilled pork should be cut into family sized pieces and well wrapped in tough, moistureproof paper before freezing. Cheap oiled

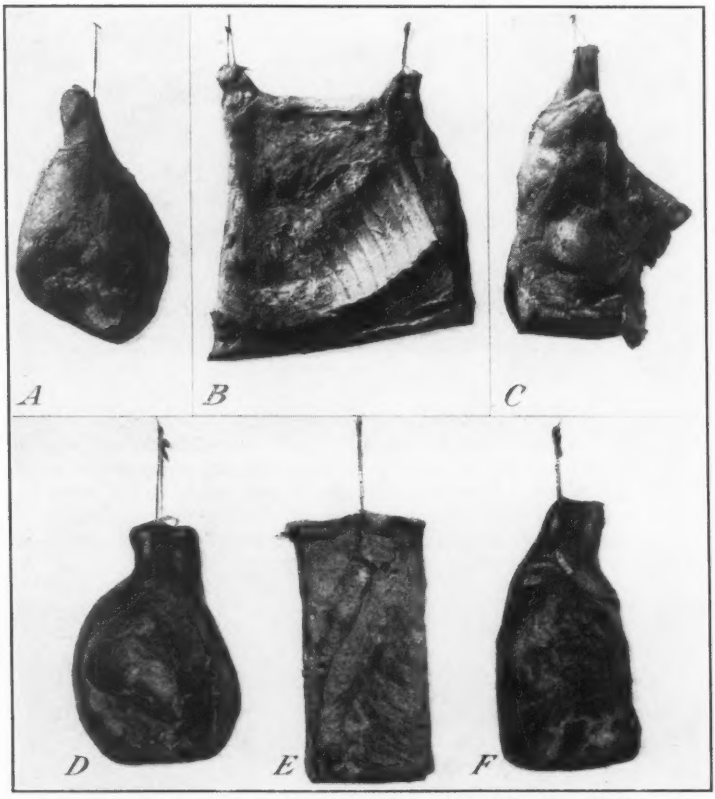

FIGURE 25.—Poorly trimmed ham (*A*), bacon (*B*), and shoulder (*C*). Similar cuts well-trimmed; *D*, *E*, and *F*.

paper or ordinary wrapping paper will not prevent undesirable drying. The wrapped fresh meat should be spread so that it will freeze quickly. When the packages are piled together in the locker it is often several days before the center of the pack reaches the desired temperature. Some trouble has been reported when the meat was piled to freeze.

Long storage periods sometimes result in undesirable drying of the exposed lean surfaces of frozen pork and the development of rancidity in the fat. Protecting the pork by proper wrapping and

by proper temperatures will tend to delay these developments although normally little trouble is encountered during the first month or so of storage. In general, farm families who use a freezer locker try to dress hogs periodically so that they can consume these limited quantities of frozen pork before it has been in storage more than 3 or 4 months.

Frozen pork is cooked with or without being thawed. Thawed or thawing pork is usually moist on the surface, thus affording ideal conditions for the growth of bacteria and mold. If the meat is to be thawed, it is desirable to thaw it in the refrigerator and to cook it promptly.

CURING PORK

Curing is a race between the multiplication of spoilage bacteria in the curing pork and the penetration of the preserving salt. It takes weeks for the salt to reach sufficient concentration to protect the center of hams and shoulders. Low temperatures are the best means known today to prevent the growth of spoilage organisms in meat until the salt has completed the task assigned to it.

In packing houses well-chilled pork cuts are cured at a temperature between 36° and 38° F. This appears to be the safest range of temperatures to use. At the same time much meat is cured on the farm at temperatures above 40° and even up to 50°, although much meat may be lost at these higher levels. The 36°–38° level throughout the curing period is the safest rather than the only one that can be used. This fact should be understood when ice-chilled curing boxes averaging 42°–48° temperatures are used.

Temperature levels are believed to influence flavor as well as soundness. Uniform temperatures normally result in a uniform saltiness and flavor development from microbial and chemical action.

CURING INGREDIENTS

SALT

Salt preserves and dries meat, but in excessive quantities will impair the flavor and make the lean muscles undesirably hard. Insufficient quantities will fail to check the development of putrefactive bacteria. A good grade of clean, common dairy or table salt is desirable.

SUGAR

Sugar is used mainly to lessen the harshness of the straight salt cure and to improve the flavor and texture of the meat. Brown or cane sugar may be used. Select the one that gives the desired flavor.

NITRATES

Saltpeter (nitrate of potash) preserves and dries the meat but is used almost entirely because it effectively fixes the bright-red color of the lean meat. Nitrate of soda (Chile saltpeter) is a little stronger, and 1.7 ounces of nitrate of soda will replace 2 ounces of saltpeter. The exact quantity of saltpeter or of nitrate of soda to be used should be weighed and mixed thoroughly in the curing mixture. It is undesirable and unnecessary to use more of either saltpeter or nitrate of soda than is recommended.

PEPPER

Pepper is sometimes dusted on the cured meat to add flavor.

SUGAR CURE

Most persons prefer the sugar cure to the plain salt cure. It can be applied by either the dry or brine method. The dry method is faster, so it is used almost exclusively in the South for hams and shoulders. Both methods are used for all cuts in colder climates. The brine method will produce a milder bacon than the ordinary dry cure.

BRINE METHOD

The standard curing mixture for each 100 pounds of meat is 8 pounds of salt, 2 pounds of sugar, 2 ounces of saltpeter, and 4½ to 6 gallons of water.

Weigh the meat and put the measured or weighed water (8 pounds=1 gallon) into a crock or clean, well-soaked, odorless, hardwood barrel. Pour the curing ingredients into the water and stir until they dissolve.

CURING HAMS, SHOULDERS, AND BACON

If a salinometer is available use a little less water to dissolve the salt than is suggested. Then test the strong brine and dilute it to proper strength. The standard curing mixture dissolved in 4½ gallons of water will make a brine that tests about 75° on the salinometer. This is excellent for curing hams and shoulders. When 5½ gallons of water is used the weaker brine, testing 65°, will produce a desirable mild bacon.

If the brine is sterilized by boiling, it should be thoroughly cooled before being used. Under ideal conditions both the brine and meat will be at a temperature of about 38° F. when the pack is put down.

The chilled hams and shoulders are packed away, skin side down, in the crock or barrel. Fit them closely together, but take care not to squeeze them out of shape. Pour in the cold, 75° brine until the pack begins to shift or float a little. This movement permits the brine to come in contact with all parts of the meat. Then add a clean weight just heavy enough to keep the meat below the surface and cover the pack with brine.

Sometimes the shape of the curing vessel or the loose packing of the meat makes the estimated amount of brine insufficient to cover the meat. If it is impossible to pack the meat more closely add enough more brine to cover the pack.

On the fifth, fifteenth, and thirtieth days after being put down, the hams and shoulders should be overhauled; that is, they may be placed in another barrel and re-covered with the same brine, or they and the brine may be removed and then replaced in the same barrel. This overhauling remixes the brine and insures its coming in contact with all parts of each cut.

The bacon strips are usually packed skin side down, each piece being crosswise of the one below it. Jowls or shoulder butts may be used to fill any unoccupied spaces. The milder, 65° brine is frequently used for bacon. Overhauling this meat on the third and tenth days is usually sufficient.

CURING TIME

Hams and shoulders are generally held in brine 4 days per pound; that is, a 15-pound ham will not be removed from cure until the sixtieth day. It is probably better to allow the small 4- to 6-pound picnics 25 to 30 days in cure. Bacon can be cured in 1½ to 2 days per pound.

A thin scum of white mold normally forms on top of the brine. If, however, the mold becomes heavy and hard or if the brine becomes ropy so that it drips from the fingers like sirup, the brine should be changed. Remove the meat, scrub it thoroughly with a brush and warm water, and repack it in a cleaned and scalded barrel. The new brine, made after the original recipe, should be diluted to as nearly the saltiness of the old brine as possible. If the hams and shoulders have been in cure a week, use 70° brine instead of 75°; if more than 2 weeks, use 65° brine. Maintain the original curing schedule. This process may not save the meat, but it is the only course available.

CURING LOINS, SPARERIBS, AND OTHER CUTS

Often the quantity of loin, spareribs, backbone, and other fresh cuts at butchering time is greater than the family can use promptly and economically. These cuts can be preserved by curing as well as by canning and by freezing.

A mild 55° to 65° brine, which contains about 6 gallons of water, is best for the ribs. They can stand a light smoke after a week in cure but are acceptable without the smoking.

The loin may be given a light smoke after about 3 weeks in a 65° brine or may be used without being smoked.

Owing to the quantity of lean meat exposed, these cuts are likely to become dry and harsh if given a long cure or smoke. It will be more satisfactory to use the brine mainly as a means for storing them a short time. Keep the temperature of this meat as near 38° F. as possible while it is curing.

CURING MEAT IN SUMMER

Hogs may be slaughtered in the summer and the meat preserved if there is some way to chill it and keep it cold during the curing period.

DRY METHOD

For dry-curing hams and shoulders, there are many different recipes that call for varying quantities of salt. Five pounds for each 100 pounds of meat is generally sufficient if one is sure that all the salt will be absorbed by the meat. However, since some salt ordinarily falls off or drains away, 6 to 8 pounds is a safer quantity. In the South, where temperatures are often high, the 8 pounds of salt is probably better. More than this quantity should not be used as it may injure the flavor and make the lean meat too hard.

Meat is likely to spoil, regardless of the quantity of salt applied if the freshly slaughtered carcass and the curing meat are held at too high temperatures.

The following curing mixture is recommended: For each 100 pounds of trimmed pork use 6 to 8 pounds of salt, 1½ to 2 pounds of

sugar, and 2 ounces of saltpeter. This is the well-known 8–2–2 recipe and is the same as that used in making the brine cure.

Mix the ingredients thoroughly in a pan and divide into two equal parts by weight. Use one part for the first rubbing, half of the remainder for overhauling the meat on the third day, and the other half for overhauling on the tenth day. In giving the first rubbing, sprinkle a little of the mixture in the bottom of the barrel. Put each ham and shoulder into the pan of curing mixture and rub it thoroughly. Force some salt into the hock and along the cut face of the butt, taking care not to injure the hand on the butt bone. Cover the face of the cut with the mixture and lay the piece carefully in place. Repeat the process in overhauling. The pieces at the top of the original pack should be at the bottom when the meat is resalted.

The same curing mixture, with the salt reduced to 5 pounds, will dry-cure 100 pounds of bacon. Overhauling on the third day will be sufficient.

In applying the curing mixture care must be taken to put the proper, or proportionate amount on each cut. For example, one-half of the 10 pounds of the 8–2–2 curing mixture makes 5 pounds that are to be used when 100 pounds of meat is first put in cure. Each 15-pound ham should receive 15 percent of that 5 pounds of mixture or three-fourths of a pound, each 20-pound ham 1 pound. Bacon strips are frequently oversalted, owing to their large surface in proportion to weight. With a little practice one can soon gage the approximate amount of mixture required by each piece.

Two days per pound is the standard curing time for the dry method. However, it is usually safer to keep 8- to 10-pound hams in the curing mixture for from 25 to 30 days. Farmers who wish to store this meat for summer use often remove the cuts at full time, string them, and allow them to hang for about 2 weeks before smoking them.

Fat backs and shoulder plates may be cured by either the dry or brine method. They are usually left in cure until used.

Pumping concentrated brine into curing meat, poking salt into ham joints, removing the aitch bone, opening the stifle joints and the shoulder joint, or boning and slicing entire cuts, are all variations of an effort to speed up the penetration of the salt. Where proper temperatures are available and the meat is in good condition these methods are unnecessary. Where temperatures are too high or the meat is not in good, sound condition, these methods may or may not prevent spoilage.

SMITHFIELD-STYLE HAM

A special type of cured ham is prepared in the South Atlantic States, oftentimes from hogs that have been partly fattened on peanuts. These hams, often known as Smithfield-style hams, are cured in a dry mixture for from 5 to 7 days, depending on their weight. They are then overhauled, resalted, and held in cure from 25 to 30 days (1½ days per pound). After the salt cure is completed they are washed in warm water, dried, sprinkled with pepper, and cold-smoked (70°–90° F.) for from 10 to 15 days, after which they are

aged and mellowed by hanging in a dry room for a period as long as 1 year.

PICKLED PIGS' FEET

In the preparation of pickled pigs' feet, special care must be taken to clean them thoroughly. The toes and dew claws should have been removed when the carcass was dressed. The glandular tissue between the toes should be trimmed out and all hair and dirt removed. Unless they are cared for properly, feet begin to spoil about as quickly as any part of the carcass; therefore, after thorough chilling they should be put in cure at once. The clean, chilled feet are usually put in the ham brine for from 15 days to 3 weeks and then cooked or simmered slowly until tender. Cook them slowly enough so that the skin will not part too badly and the feet pull out of shape. The cured, cooked feet are then thoroughly chilled and packed in cold, moderately strong (35-grain) vinegar, to which spices such as bay leaves or allspice may be added. The feet may be used at once or kept in the vinegar for 3 weeks or even longer.

Souse is made by cooking cured or uncured feet in a little water until the meat slips from the bones. The meat and strained soup in which the feet were cooked are then seasoned with vinegar and spice, brought to a boil, put in molds, and allowed to jell. Additional cooked pork trimmings may be added.

SMOKING CURED MEAT

Cured pork is smoked, primarily, to give the meat its familiar color and flavor and to evaporate some of the moisture from it. The small quantities of smoke products deposited on smoked meat also assist in sealing the surface and in delaying the development of rancidity in the fat. Relatively high smokehouse temperatures (110° F. or above) with a light smoke will speed up the drying; lower temperatures (80° to 110° F.) with a dense fog of smoke will intensify the smoky flavor in the meat. If the smoky flavor is not desired and the meat is not smoked, it should be hung up to dry until the dry-cured meat loses about 5 percent of its cured weight and the brine-cured meat loses about 10 percent.

Smoked, cured meat will have a brighter color and a milder flavor if it is freshened in cold water before being smoked. Hams and shoulders are soaked about 2 hours and bacon about 30 minutes. Most farmers do not soak the hams and shoulders that are to be stored for summer use.

All pieces to be smoked should be strung and scrubbed with warm water to remove the excess salt and grease. Hams and shoulders should be strung through the shank. Unless a regular stringing needle is at hand make an opening through the shank with the narrow blade of the boning knife and pull a stout string through with a wire loop (fig. 26). A wooden or wire skewer is usually run through the flank end of the bacon strip and the string inserted just below it (fig. 25, *E*). This keeps the piece square while it is hanging in smoke.

It is usually best to hang the cured, washed meat in the smokehouse overnight to drain and dry. Start the fire in the morning. If the

meat is still dripping when smoking begins the lower pieces will be streaked. Hang the meat so that no two pieces touch.

Cured pork may be smoked at a temperature of 100° to 120° F. The ventilators should be left open, especially at first, to permit the moisture to escape. A heavy fog of smoke is unnecessary. Continue the smoking until the meat has the desired color. Two days' smoking should give it a rich mahogany brown.

Meat that is to be aged or held for summer use is usually smoked more slowly. The temperature is held at 70° to 90° F. and the fires rebuilt intermittently over a period of from 1 to several weeks. This is as much a drying as a smoking process and is believed to assist in preserving the meat and in the normal development of the mellow flavor characteristic of smoked pork that has been aged several months.

FIGURE 26.—Stringing a cured ham for smoking.

Smokehouse construction may vary from the barrel type to the elaborate six- or seven-story buildings used by commercial plants, but the general design of all is the same. There is a damper at the bottom to regulate the draft on the fire, enough distance from fire to meat to protect the meat from scorching, and a damper in the roof to permit the escape of evaporated moisture and to control the passage of the smoke past the meat. A distance of 10 feet between meat and fire is safe. If the distance is only 5 or 6 feet, an inverted tub or metal shield should be placed above the fire to deflect the direct heat. A tight, preferably fireproof, building 6 feet wide, 6 feet long, and 8 feet high is a common type. Almost all cement or building-tile companies will supply plans for smokehouses, giving detailed directions for construction.

Green hickory wood and sawdust are the standard fuels for smoking meat, but almost any hardwood such as oak, apple, maple, or ash will be satisfactory. Where timber is scarce, corncobs may be used. Any resinous wood will blacken the meat and give it an undesirable flavor. If paper or pine shavings are used to kindle the green hardwood, be sure that all have been completely burned or removed from the fire before the smokehouse door is closed.

A fire built after the Indian fashion, with the sticks radiating from the center like the spokes of a wheel, will become lower and cooler as it burns. Building such a fire is a good precaution, for inattention to a hot fire has ruined the meat in many a smokehouse. Green sawdust may be used to deaden the blaze.

Under the provisions of the Federal Meat Inspection Act the use of liquid smoke, smoked salt, and like preparations intended to be applied to meat as a substitute for smoking them, is prohibited.

TESTING SMOKED MEATS

Sourness in smoked pork can often be detected when the warm meat is removed from the smokehouse, and often a taint will be noticeable a week or two after smoking, but most of the meat that has safely reached this stage may be considered sound. A ham trier may be used to test each piece. This instrument resembles a narrow 10-inch harness awl. A length of stiff wire sharpened at one end may also be used. This trier is run along the bone to the center of the ham from both hock and loin ends. If the trier brings out a sweet odor, the meat is sound. If upon withdrawal the trier carries an unpleasant odor, the piece should be cut open and examined carefully for spoilage. If there is a definite odor of putrefaction, it is best to destroy the entire piece. Shoulders are tried in the shank, at the shoulder point, and under the bladebone.

WRAPPING AND STORING SMOKED MEATS

After the smoked meat has cooled, it is ready to be wrapped and stored. Wrapping protects the meat from insects and partially excludes the light and air that speed the development of rancidity in the fat. Many farmers rub pepper on the meat at this time to add flavor. Ground black pepper, with or without a little red pepper, may be used. The meat is then well covered with parchment paper and put into muslin bags. The paper wrapping should be heavy enough to keep the grease from soaking the bottom of the bag. The tops of the bags should be folded over and tied securely, a loop for hanging the meat being made in the outside tie string. Do not hang wrapped meat by the string that passes through the meat as insects may enter the package along the string. Each sack may be further protected by being painted with yellow wash, and then hung up for future use. In preparing the yellow wash, for 100 pounds of hams or bacon use the following: Three pounds of barium sulphate, 1¼ ounces of yellow ocher, 1 ounce of glue (dry), and 6 ounces of flour.

Fill a pail half full of water and mix in the flour, breaking up all lumps thoroughly. Mix the ocher in a quart of water in a separate vessel, add the glue, and pour them into the flour-and-water mixture. Bring this mixture to a boil and add the barium sulphate slowly, stirring constantly. Make the wash the day before it is required. Stir it frequently while using it and apply it with a brush. Lime, clay, flour, or a similar substance mixed with water to a rather thick consistency, may also be used to paint the bags.

The date for killing and curing should be planned if possible so that the smoked meat can be bagged or put in an insectproof place before the flies appear in the spring. Careful watch should be kept for insect infestation throughout the storage period.

If the meat has been properly cured and smoked it should store satisfactorily in a dry, dark, cool, well-ventilated place. Many farmers keep their hams and shoulders a year or longer until they have developed the mellow flavor characteristic of stored smoked pork.

In humid climates mold may develop very rapidly on the meat but usually can be rubbed or trimmed off without serious loss. Meat should be closely watched for evidence of mold penetration into the body of the meat. Once the mold works in between the muscles it injures the flavor of the meat.

The shrinkage of dry-cured hams and shoulders, just after being smoked, will range from about 8 to 15 percent of their fresh weight, and of brine-cured hams and shoulders, from 3 to 8 percent. At the end of 12 months' storage the shrinkage of either may reach 20 to 30 percent.

Bacon is usually more palatable when freshly cured and smoked. It does not store so well as hams and shoulders, and most farmers prefer to use it during the spring and early summer.

RENDERING LARD

Ordinarily the leaf fat, back fat, and fat trimmings are cooked together. The caul and ruffle fats from the internal organs yield a darker product than the other fats. If they have been removed carefully and washed and chilled promptly, they should have an acceptable odor and flavor.

Lard will render more rapidly and completely if the fat is cut into small pieces before being put into the kettle. Many persons prefer to grind it. Start cooking slowly with a small quantity of fat that can be stirred easily. When this fat has begun to melt add the remainder. The kettle should not be very full, or it may boil over. To prevent sticking and scorching, the fat should be stirred frequently and the fire watched during the entire cooking process.

At the beginning of the process, the temperature of rendering lard will be about 212° F. As the water contained in the fat tissues evaporates the temperature will rise slowly until it reaches 240° or 255°, which is as high as it should be allowed to go.

As rendering proceeds, the residual tissues (cracklings) will brown and float. When they are more nearly completely rendered they will gradually sink to the bottom. Care should be taken at this time to prevent small particles of cracklings from adhering to and scorching on the bottom of the kettle. Many persons stop the cooking when the cracklings are still floating. The more nearly complete rendering, however, removes a greater proportion of the moisture, thus producing lard that will be more likely to keep.

It is advisable to allow the rendered lard to settle and cool slightly before emptying the kettle. The liquid lard may be siphoned or dipped carefully into containers. The rest of the lard, containing the cracklings, is usually put through a press, the lard being strained through a screen covered with two or three thicknesses of cheesecloth. If the hot lard can be put into 5- or 10-pound containers and stored immediately at temperatures near or below freezing, it will chill rapidly enough to produce a fine grain.

Leaf fat will yield from 90 to 93 percent of its weight in rendered lard; a combination of leaf fat, back fat, and cutting fat, from

80 to 85 percent; and visceral fat, from 55 to 65 percent. Well-pressed cracklings derived from skinless fat from an average kettle will constitute 4 to 6 percent of the original weight of the fat.

STORING LARD

Air and light may cause a chemical change in stored lard which results in rancidity. For this reason the containers should be filled as nearly to the top as possible, sealed with a tight cover, and stored in a dark, cool place. Once the lard has become rancid, it is impossible to improve it.

If the moisture has been eliminated from the lard by a thorough rendering, no water-souring should develop during storage.

PREPARING SAUSAGE AND RELATED PRODUCTS

Sausage may be made one of the most desirable and appetizing of all pork products. Often the shoulder, bacon strip, and even the loin and hams are made into sausage along with the trimmings. There are many kinds of sausage, for each of which the seasoning may be varied to suit the individual taste. The few recipes included here are offered mainly as a guide. Desirable sausage can be made only from sound, high-quality materials. Care and accuracy in proportioning the ingredients are also essential.

The sausage grinder should be equipped with two combs or plates, having ½- and ⅛-inch holes, respectively. A small hand stuffer will be convenient.

Fresh pork sausage, and headcheese, may be used without being stuffed, but sausages similar to liver sausage and Bologna-style sausage should be stuffed in casings. Bundles or sets of salted casings may be purchased from almost any butcher. Several types of manufactured casings are also on the market. Animal casings should be soaked for several minutes in warm water and then flushed out immediately before being used. Sausage may be stuffed in muslin bags. After being scrubbed and chilled, the stuffed bags are usually dipped in paraffin.

In stuffing, force enough sausage into the stuffer attachment to fill it. Slip as much soaked casing over the attachment as it will hold. If muslin casing is used, pull the closed end of the casing up tightly against the end of the stuffing tube. These precautions prevent the formation of air pockets in the sausage.

The operator supports the casing at the end of the stuffer with the first finger of his left hand while he turns the crank with his right hand. Pressing upward with the left forefinger and raising the stuffed casing above the end of the stuffer will pack the casing more tightly, thereby keeping out air pockets. Animal casings are cut after the proper-sized ring or length has been stuffed and a new length is then begun.

To tie the casings, drive a tenpenny nail into the far corner of the table and fasten to it one end of a stout, soft, white string 3 feet long. Grasp both cut ends of the casing, for example, a ring of liver sausage, in the left hand and tie them together with two half hitches of the string. Tie the first ring near the nail and each

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succeeding one a little farther down the string. When the string is full, cut it free and attach a new one.

FRESH SAUSAGE

The fresh trimmings from which pork sausage is made should be about one-third fat and two-thirds lean. If more fat is included, the sausage may be too rich and will have a large cooking loss. Less fat will make the cooked patties rather hard and dry and difficult to brown.

In making a small quantity of sausage to test the recipe, the following measurements may be used:

4 pounds trimmings.
5 level teaspoons salt.
4 level teaspoons ground sage.
2 level teaspoons ground pepper.
½ level teaspoon ground cloves or
1 level teaspoon ground nutmeg (if desired).
1 teaspoon sugar.

For 100 pounds of trimmings use the following:

1¾ pounds salt.
2 to 4 ounces ground sage.
2 to 4 ounces ground pepper.
½ to 1 ounce red pepper (if desired).
½ to 1 ounce ground cloves, or
1 ounce ground nutmeg (if desired).
12 ounces of sugar may also be included if the sausage is to be used reasonably soon.

The seasoning should be well mixed, spread over the trimmings, and the whole quantity ground through the fine plate. Some persons prefer to grind the unseasoned meat through a plate with ½-inch holes and then mix it with the spices and regrind through a plate with ⅛-inch holes.

If the sausage is to be put into casings it should be stuffed immediately after grinding. It should then be soft enough to pack tightly in the casings without the addition of cold water. It may also be fried down or canned.

To make bulk sausage that will slice and fry without crumbling, add a scant half cup of cold water to each 4 pounds of ground seasoned sausage and knead with the hands until the meat becomes very sticky and doughlike. Pack tightly in small molds or pans and allow it to chill before slicing.

SMOKED SAUSAGE

Use pork sausage made with 2 pounds of salt, instead of 1¾ pounds, per 100 pounds of trimmings. If it is too stiff to stuff properly, add from 3 to 5 percent of cold water and knead until the mass becomes doughlike. Stuff tightly in casings and allow it to cure for about 24 hours in a cool place. Smoke and dry at a temperature of 70° to 90° F. for a day or two until a dark mahogany color is obtained. This sausage should not be kept until hot weather unless it is canned.

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BOLOGNA-STYLE SAUSAGE

Bologna-style sausage consists of ground pork and beef mixed with enough water to give the sausage the desirable fine, tenacious texture. Commercial concerns sometimes grind warm beef from freshly slaughtered cattle with cracked ice because this method gives a still finer grain to the finished product.

One standard recipe for Bologna-style sausage is as follows:

60 pounds beef.
40 pounds pork trimmings.
20 pounds cold water.
2 to 2½ pounds salt.
1 ounce saltpeter.
2 to 4 ounces black pepper.
1 to 1½ ounces coriander.
1 ounce mace.
Onions (if desired).

Grind the chilled beef trimmings with salt at the rate of 2 pounds per 100 pounds of beef. Use the coarse grinding plate, and allow the meat to cure in a cool place for about 48 hours. Salt, in the same proportion, is added to the coarsely ground pork the next evening and the pork is allowed to cure overnight. Many persons do not cure the pork.

Regrind the cured beef, using the plate with ⅛-inch holes. Then add the pork and grind the mixture again. If the pork was not cured add the salt (13 ounces for each 40 pounds of pork) before grinding. Add the spices and the water and stir or mix vigorously until the whole mass has become sticky. It often takes 30 minutes to mix this sausage properly.

Stuff the sausage tightly into beef casings or muslin bags and allow it to hang and cure in a cool place until the next morning. Put it in a well-ventilated smokehouse heated to 110° to 120° F. Protect the casings from a direct blaze that might scorch them. The sausage should take on a rich mahogany brown in about 2 hours' smoking.

Put the hot, freshly smoked sausage immediately into water heated to 160° to 175° F., and cook it until it squeaks when the pressure of the thumb and finger on the casings is suddenly released. The usual cooking time for sausage stuffed in beef "rounds" is 15 to 30 minutes; for larger casings 60 to 90 minutes. Plunge the cooked sausage into cold water and chill it. Hang it in a cool place.

COOKED PRODUCTS

Cooking is a convenient means of preparing the edible parts of cuts that are difficult to bone, such as the head, feet, and tail. It is also a means of utilizing miscellaneous pieces of trimmings, liver, heart, tongue, and the soup in which the meat has been cooked.

All meat should be well trimmed and washed before being cooked. The teeth, nasal passages, eyes, and eardrums should be removed. If the lips, snout, and ears have been well cleaned, they may be included. The jowl is usually cut off and cured. It may be added but will often cause the headcheese and scrapple to be too fat.

The feet should be well shaved and cleaned and the glandular tissue between the toes trimmed out.

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HEADCHEESE

Headcheese is easily made. Make deep cuts in the jowls or other thick pieces of meat, cover with water, and simmer until the meat is well done and slips easily from the bones. The skin, if used, should be cooked in a net or sack so that it may be removed when so tender that a finger can be pushed through it. The thick ears and snouts will require longer cooking than the other skin. The skin is ground with the plate having ⅛-inch holes. The jowls and other pieces are boned after being cooked. These, with the boneless pieces such as the heart, are ground with a plate that has ½-inch holes. Some persons prefer to cut the tongue and some of the larger pieces of fat into strips instead of grinding them.

The finely ground skin and coarsely ground pieces are then mixed with enough of the soup—the water in which the meat was cooked—to make the mass soft without being sloppy. This mixture is returned to the kettle and brought to a boil. This reheating serves to mix the gelatin thoroughly through the soup so that when the headcheese is poured into shallow pans and chilled it will slice without crumbling.

Seasoning is added at the beginning of the second cooking. Usually it is safe to season to taste though the following quantities of seasoning per 100 pounds of cooked meat, including the added soup, are a satisfactory guide:

2 to 2½ pounds salt.
3 to 5 ounces black pepper.
¼ to 1 ounce red pepper (if desired).
1 ounce ground cloves (if desired).
1 ounce coriander (if desired).
2 ounces sweet marjoram (if desired).

If headcheese is stuffed into casings, it should be seasoned and stuffed before the second cooking. The stuffed headcheese should then be replaced in the remaining soup and simmered until it floats. This will require from 10 to 30 minutes. It is then chilled in cold water and stored in a clean, cool place.

Headcheese is usually eaten cold, sometimes with vinegar.

LIVER SAUSAGE

Cook heads, tongues, skins, hearts, and other pieces as for headcheese, but for a shorter period. Remove from the fire when the cuts can be boned. Scald the livers last. If they are deeply cut with a knife they should be sufficiently seared in about 10 minutes. Liver adds a definite flavor to this sausage; 10 to 20 percent of liver, by weight, is usually added to the other cooked products.

Grind all the cooked materials moderately fine and add about one-fifth as much soup by weight, using enough soup to make the mixture soft but not sloppy. Season to taste and mix thoroughly. The following are standard quantities of seasonings for 100 pounds of the mixture:

2 to 2½ pounds salt.
2 to 4 ounces black pepper.
1 to 3 ounces sage (if desired).
¼ to 1 ounce red pepper (if desired).
1 to 2 ounces allspice (if desired).

The seasoned, well-mixed sausage is usually stuffed in beef casings and simmered in water until it floats; usually the time required is 10 to 30 minutes. After being cooked, the sausage is plunged into cold water, chilled for at least 30 minutes, and hung up to drain.

If the meat is cooked too much in the first kettle, the second cooking, after the sausage has been stuffed, will destroy the tight "live" texture of the finished sausage.

SCRAPPLE

Scrapple, an especially favored breakfast dish in many sections, is composed of cooked pork and soup thickened with corn meal, flour, and sometimes shorts.

Cook the heads, hearts, and trimmings as for liver sausage, or until the bones can be removed. Cook the skin, if used, until tender. Grind all the material through the fine plate. Return all the ground material to the soup after it has been strained to remove the bones, and bring it to a boil.

The cereal mixture to be added may vary widely. One consisting of 7 parts corn meal and 3 parts white or buckwheat flour or 7 parts corn meal, 2 parts shorts, and 1 part buckwheat flour, should be acceptable.

Four parts ground cooked meat products, 3 parts soup, and 1 part dry cereal mixture (by weight) will produce a richly flavored, satisfactory scrapple. More meal and soup may be used if desired.

In adding the cereal mixture, moisten it with some of the cooled soup so that it may be added to the hot soup without forming lumps. Boil it for about one-half hour, stirring it frequently or constantly to prevent sticking. Add the seasoning shortly before the cooking is finished and stir it in well.

The following seasonings may be used for 100 pounds of scrapple, including the soup and the dry cereal mixture:

2 to 2½ pounds salt.
2 to 4 ounces black pepper.
2 to 4 ounces sweet marjoram.
2 to 4 ounces sage (if desired).
1 ounce red pepper (if desired).
1 ounce nutmeg (if desired).
½ ounce mace (if desired).
2 pounds ground onions during second cooking (if desired).

The hot scrapple is poured into small shallow pans and chilled as promptly as possible. If properly made, it can be sliced and fried quickly without much crumbling. The slices may be dipped in egg before they are fried.

PANHAS

The soup remaining after the making of headcheese or liver sausage may be used to make a kind of corn-meal mush called panhas. Strain out all bones, bring the soup to a boil, and add the meal slowly. A safe method of preventing the formation of lumps is to moisten the meal beforehand with a little cooled soup, adding enough of the liquor to make a thick paste.

Three or four parts of soup to one part of meal, by volume, is a good proportion. Season to taste with the seasonings given for head-

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cheese. Cook the meal 30 to 45 minutes and pour it into shallow pans to cool. Slice and serve like scrapple.

CANNING PORK [2]

Pork may be canned successfully in the home, provided it is processed under steam pressure. The temperatures required for effective sterilization (240° to 250° F., corresponding to 10 and 15 pounds steam pressure) cannot be obtained inside the can or jar except by the use of the steam pressure canner. The water bath, the oven, and the steamer without pressure are inadequate for canning pork and cannot be used safely. If a pressure canner is not available, other methods of preservation should be used.

All pork for canning should be clean and sound. Unless the pork is to be canned at once, chilling the carcass after slaughtering is necessary. Chilling makes little difference in the flavor or tenderness of the canned product. Chilling is recommended, however, as raw meat is easier to handle after chilling, may be held for a few days until it is convenient to can it, and there is less danger of spoilage if canning is unexpectedly delayed.

TYPES OF CONTAINERS

The most desirable utensils for the preparation of meat for canning are preferably enamelware, aluminum, tin, or other stainless metal. Meat should not be allowed to remain in contact with galvanized iron more than about 30 minutes, or it may take up harmful quantities of zinc. Wooden utensils or surfaces require special care in cleaning to free them from bacteria. They should be scrubbed with soapy water to remove all grease and then thoroughly rinsed with boiling water. If used for several days at a time they should be disinfected with a hypochlorite solution (calcium, potassium, or sodium hypochlorite) applied after the scrubbing and scalding.

Plain tin cans and glass jars are used for the home canning of pork.

In canning meat the head space (space at the top of the can) is particularly important. If the liquid does not cover the meat, it will discolor and lose flavor during storage. In packing containers allow the following head space: Glass jars, one-half inch; No. 1 tin cans, one-fourth inch; No. 2 tin cans, five-sixteenths inch; No. 3 tin cans, three-eighths inch.

The sizes of containers most suitable for meat products are No. 2 and No. 2½ tin cans, and pint glass jars. The No. 3 tin cans (quart) and quart glass jars require much heavier processing, and though times are given for them in table 1, their use is not recommended.

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[2] This information concerning the preservation of pork by canning is from Farmers' Bulletin 1762, Home Canning of Fruits, Vegetables, and Meats, prepared by the Bureau of Home Economics, U. S. Department of Agriculture. More detailed directions for the canning of pork may be obtained from the Bureau of Home Economics.

TABLE 1.—*Timetable for processing pork in various containers in the steam pressure canner at 250° F., or 15 pounds pressure*[1]

Product	No. 2 can	No. 2½ can	No. 3 can	Pint glass jar	Quart glass jar
	Minutes	*Minutes*	*Minutes*	*Minutes*	*Minutes*
Fresh pork	85	110	120	85	120
Headcheese	90	----------	----------	90	----------
Liver paste	90	----------	----------	90	----------
Sausage	90	115	----------	90	120

[1] At altitudes over 2,000 feet, add 1 pound of pressure for each additional 2,000 feet. After processing, cool tin cans at once in cold water. Better results are obtained by canning pork in No. 2 and No. 2½ cans or pint glass jars rather than in No. 3 cans or quart glass jars.

When glass jars are used, pork should be precooked in the oven or in water before being packed in the container. When tin cans are used, the meat may be precooked in either of these ways and packed hot, or it may be packed raw and the cans exhausted before being sealed. The latter method gives a little better flavored product, and the liquid is all meat juice; but it takes more time and stove space. Frying is not recommended as a method of precooking meat for canning, because it makes the meat hard and dry and may give it a disagreeable flavor.

PARTS BEST SUITED TO CANNING

In the preparation of pork for canning it is especially important to trim off practically all the fat. When much fat is canned with the lean meat it causes correspondingly greater shrinkage during processing as the fat melts. The fat may also interfere with the destruction of bacteria and make the canned product more likely to spoil. Cuts of pork that contain rather large proportions of fat are more economically preserved by curing because of the heavy trimming and shrinkage they undergo in canning. The parts of pork usually canned are: Loin, meat from spareribs; head, tongue, and heart in headcheese; loin and lean trimmings in sausage; and liver in liver paste. Hams and shoulders may be canned, but they are generally cured.

Salt is added as follows: One-half teaspoon to a pint jar, three-fourths teaspoon to a No. 2 or No. 2½ can, and 1 teaspoon to a quart jar or No. 3 can. When tin cans are used, place the salt in the cans before packing them with meat.

FRESH PORK

Remove excess fat from the meat to be canned and precook the meat by any of the methods described on page 36. Pack hot and process as directed in table 1.

HEADCHEESE

Prepare headcheese as directed on page 32. No sage should be used as it may become bitter after canning. Pack the headcheese hot into containers and process as directed in table 1. It is better to use tin cans so that when the can is opened the product may be removed in a single piece.

PORK LIVER PASTE

Pork liver may be canned as liver paste, which is made as follows:

- 3 pounds liver.
- 1½ pounds fat fresh pork.
- 2 tablespoons salt.
- 1 teaspoon white pepper.
- ½ teaspoon ground cloves.
- 1 medium-sized onion, chopped.
- 3 eggs.
- 6 tablespoons fine dry bread crumbs.
- ½ cup water.

Wash the liver thoroughly and remove veins and tough membranes. Grind the raw liver and pork twice through a plate with ⅛-inch holes, to make it very smooth. Add the seasonings. Beat the eggs well and combine with the bread crumbs and water. Stir all ingredients together until well-mixed. Pack into No. 2 cans, leaving 1 inch of head space, and exhaust until the paste is heated through to the center of the cans. This requires about 40 to 50 minutes. Remove some of the paste or add a little hot water if necessary so that the cans have the proper head space before sealing. Process as directed in table 1.

PORK SAUSAGE

Prepare the sausage as directed on page 30, but omit the sage because it gives the sausage a bitter flavor after processing. See that the seasonings and meat are well-mixed together.

If using tin cans, pack the raw sausage closely into the No. 2 size and exhaust the cans until the sausage is steaming hot. This requires 40 to 50 minutes. Process as directed in table 1. Before opening a can, heat it for a few minutes in boiling water, then slip the contents of the can out in one piece, slice into rounds, and reheat in gravy or in an oven.

If glass jars are used, mold the sausage into cakes and precook in a moderate oven (350° F.) for 10 to 15 minutes, or until the cakes are slightly browned and the color of raw meat has almost disappeared. Pack into the jars and cover with the drippings or with hot water. Process as directed in table 1.

PRECOOKING IN WATER

Cut the meat into uniform pieces weighing about 1 pound and place them in boiling water. Partly cover the kettle and simmer for 12 to 20 minutes, until the color of the raw meat has almost disappeared from the center of the pieces. At this stage the meat has lost about one-third of its original weight, as some of the juice has cooked out. Cut the meat into smaller pieces immediately, pack it into the containers, and press it down closely with a wooden mallet or pestle. Cover with the broth, leaving proper head space, and process immediately. This method, commonly referred to as parboiling, is the quickest way to precook a large quantity of meat.

PRECOOKING IN TIN CANS

Precooking should never be attempted with glass jars because of danger of breakage. Pack two or more pieces of meat into each can, and place the filled but open cans in a bath of boiling water that comes to within 1½ to 2 inches of the top of the can. Cover the bath to hold in steam and heat, being careful that water from the bath

does not bubble into the cans. Continue heating until the meat is steaming hot, or 170° F., at the center of the cans, and has practically lost its raw color. If no thermometer is available, turn out the meat from a few of the cans to be sure it is heated through. The time required is about 40 to 50 minutes for No. 2 cans. Press the meat down and be sure it is covered with broth and that there is proper head space in the cans. Seal at once and process immediately.

PRECOOKING IN THE OVEN

Cut the meat into uniform pieces weighing about 1 pound each, and cook in a moderate oven (350° F.) until the raw color of the meat almost disappears at the center. This requires about 30 to 40 minutes. Cut the meat so that there are two or more pieces to each container, to facilitate heat penetration, pack at once closely, cover with pan drippings or with boiling water, leaving proper head space, and process immediately.

REGULATIONS FOR SHIPPING MEAT OR MEAT FOOD PRODUCTS

Farmers who ship their meats must comply with official State and Federal regulations. Below is shown a sample shipper's certificate such as must be used in interstate shipments of uninspected meat or meat food products which are from animals slaughtered by the farmer on the farm. Blank certificates should follow this sample. In size the certificate should be 5½ by 8 inches.

Shipper's Certificate

*Date*_____, *19*__.

Name of carrier_____
Shipper_____
Point of shipment_____
Consignee_____
Destination_____

I hereby certify that the following-described uninspected meat or meat food products are from animals slaughtered by a farmer on the farm, and are offered for transportation in interstate or foreign commerce as exempted from inspection according to the act of Congress of June 30, 1906, and at this date they are sound, healthful, wholesome, and fit for human food, and contain no preservative or coloring matter or other substance prohibited by the regulations of the Secretary of Agriculture governing meat inspection.

Amount and weight.

Kind of product_____

_____
(Signature of shipper)

_____
(Address of shipper)

Two copies of this form are to be presented to the common carrier with each shipment.

COOK PORK THOROUGHLY

Man may become infected with a very serious disease called trichinosis through the eating of raw pork. This disease is caused by parasites called trichinae, which are too small to be seen by the naked eye but may be present in the lean meat of hogs. The danger of trichinosis may be entirely avoided by cooking pork thoroughly.

Trichinosis may be contracted from tasting sausage during its preparation to determine when seasoning is satisfactory, from hastily cooked hamburgers that contain some pork, from imperfectly cooked fresh pork, and sausage, smoked hams, bacon, and shoulders, and from improperly prepared ready-to-eat products such as Bologna-style sausage, boneless loins, capocollo, coppa, dry or summer sausage, and Italian-style ham. When these latter products are eaten without further cooking in the home, one must be sure that they have been made in a plant where competent official inspection has insured a treatment of the pork muscle that will destroy possible live trichinae.

COOK PORK THOROUGHLY

U. S. GOVERNMENT PRINTING OFFICE: 1938

For sale by the Superintendent of Documents, Washington, D. C. - - - - - Price 5 cents

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